



EQUILIBRIUM

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Cover Picture

This magnificent desk set needs no words! The candlestick bears the words W Wharton & Sons, Birmingham. Another example is known, but on that one, the black lacquer tray is not ornamented. Desk compendiums were very popular during the Victorian period, (1837-1901); this example was made right in the middle of this period. See the article on candlestick scales, pages 3099-3109.

The editorial staff extends its sincerest apologies to Deborah Jean Warner. We deeply regret that her name was misspelled in the biographical information included at the end of her article entitled "The Harvard Trip Scale" pages 3092-3096.

Editor's note: In this the inaugural issue of a full color format for EQM, I would like to request all members to contribute articles of any size, photos and descriptions to this, YOUR JOURNAL. Without your contributions EQM cannot continue. Please help support the EQM staff by submitting your material for our use.

Many Thanks,

Jan Berning

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Candlesticks, Part 1

BY BRIAN BRASS

My wife gave me my first candlestick scale as a present in 1975 (figure 1). I was immediately intrigued, and this initial fascination has not diminished over the years as I examined one variety after another, either in my own, or the collection of someone else. I have examined numerous examples during the lifetime of my scale-collecting activities.

The Beginnings

In 1840, a unique postal service was introduced in England under the able leadership of William Hill, the newly appointed Post Master General. Entitled the Penny Post, it heralded a new era in the transmission of letters, and was as original in its time as the internet is to us today. Previously, mail had been charged by the distance between sender and recipient - with certain upward adjustments depending on its weight, the number of sheets and their size, and whether the letter was sealed. However, from January 10th 1840 onwards, any number of sheets of paper could be sent within the United Kingdom for one penny as long as the weight was less than half an ounce. A graduated scale of charges was then applied according to the weight of the letter. Neither the distance nor the number of sheets of paper was relevant to the cost of posting.

The Commercial Opportunity

Designs for weighing letters abounded; a race was on for a device which would not only weigh the letter, but would also indicate the value of the new stamp which was required to be affixed on the right hand top corner of the envelope [stamps being first sold in June 1840]. The result was untold examples of Victorian ingenuity and artistry. The Penny Post presented a commercial opportunity second to none. Every desk, every office, every factory dispatching both letters and parcels needed a scale. The first known design of candlestick scale was made by R W Winfield and was dated 13th January 1840 (Figure 2a & 2b).

Variety of design and technology

The letter scales which were invented during that early period used almost every conceivable technology available. The most common form was a roberval. There were letter scales using various weighing principles: namely, the steelyard, the rocker, the spring, the bismar, the pendulum, and others using ingenious methods of weighing and calculating. The candlestick variety made

Figure 2a.  The first design registration by R W Winfield. Graduated panel screwed on. For weight only, so early, 1/2 oz., 1 oz., 2 oz., 3 oz., 4 oz. Black patina with lacquered stripes. Also available with gilt finish.

Figure 2b.  A close up of 2a, showing the method of construction. The cast brass base rises to a neck, into which the tube above is screwed. The collar with the lettering is rivetted over the bottom of the tube, strengthening the join in the soldered tube.



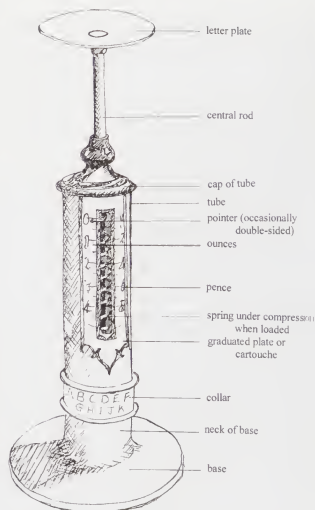
Figure 1.  R W Winfield, postal rates 1/2 oz for 1d, 1 oz for 2d, 2 oz for 4d, 3 oz for 6d, 4 oz for 8d (1840-65). See postal rate chart on page 3109.





Figure 3 The later version of Winfield's first design registration, the collar no longer claiming that protection, but merely has stamped R W WINFIELD BIRMINGHAM. Postal rates 2 oz for 1d, 1 oz for 2d, 2 oz for 4d, 3 oz for 6d, 4 oz for 8d (1840-65).

Figure 4 Diagram of the standard candlestick scale. The comment about the base refers to a sheet attached underneath, obscuring the view of the screw and the rod that descends as the load is applied. The spring under tension was more commonly used in the USA. The length of tube needed was not affected by this variation.



use of the simple spring, which had already contributed so greatly in a multitude of ways to the success of the industrial revolution (Figure 3).

The Description

The candlestick is so-called because (presumably) its central pillar was analogous to a candlestick (in fact a hollow tube). I have long suspected that this tube came from the very factories in Birmingham which made real candlesticks in brass, silver and other metals. As you can see from the drawing (Figure 4) the letter plate is attached to a rod that has a pointer at its bottom. The rod is attached to the top of the spring, so that, when a load is applied, the spring is compressed. The rarer type has the rod attached to the bottom of the spring (Figure 6) and the spring is attached to the top of the tube, so that, when a load is applied, the spring is stretched (in tension, as in Winfield's registered design No. 3267 of 25th May 1852). An even rarer variety has the rod attached to the top of the spring, so that the spring is compressed by adding the load, but the graduations can only be down the top part of the tube, while the spring fills the bottom of the tube (Figure 5). However, not all models used the spring. The hydraulic version uses a liquid such as mercury or water as the basis for indicating the mass being weighed. [See EQM pages 2739-2746 for additional information.]

Figure 5 This minute candlestick is only 3 1/2 inches (87mm) high. The country of origin and the maker are unknown. The design is particularly irritating, as the letter obscures the view of the graduations, and the graduations are so close together that they are very difficult to read. James Reeve collection.





Figure 6.  Anonymous candlestick of exceptionally thin proportions, being 7½ inches (190mm) tall. The base is heavy, being an iron casting covered by a thin pressed brass 'cup'.

The narrow spring is attached to the top of the tube, and the rod is attached to the bottom of the spring. The tube is made from flat sheet metal rolled and soldered. For weight only, ½ oz., 1 oz., 2 oz., 3 oz., 4 oz., 5 oz. and the only example known graduated to 5 oz. capacity.

The spring is been shown extended by adding a lead mediaeval weight as a load.



Figure 7.  The Winfield candlestick on the right is exceptionally tall, being 13½ inches (335mm) high. It is standing beside a standard Winfield for comparison.

The tall scale has a collar stamped N° 170 JANUARY 13 1840 R W WINFIELD BIRMINGHAM and a screwed-on graduated plate for weight only, from 0-16 [ounces].

The rod is confined in the base by three tiny concave rollers arranged evenly round the rod that prevent the rod from binding in the hole in the base. The letter plate is screwed to the top of the rod. The whole scale is solidly constructed of the highest quality lacquered brass.

Candlesticks can be as small as 3½ inches (85mm) in height to 13½ inches (335mm) tall such as a packet scale by Winfield (Figure 7). L E Brown of USA made a kitchen scale in either brass or in zinc alloy, 10 inches (260mm) tall, and Henley, England produced a fat, tin kitchen scale 8 inches (200mm) tall (Figure 8).

The average candlestick scale is about 6½ inches (170mm) high. Most letter plates are simple flat brass discs, but others are gloriously stamped, or embellished (Figures 9, 10, 11 & 12). The main body of the scale (the tube) was usually made of brass, stamped or cast (Figure 13a & 13b), but other varieties have been seen in glass, silver, ivory, patinated brass, tin and wood. A rare variety, in bronze, doubles as a bell. The bases are frequently the most eye-catching part of the scale, being made of cast-brass, pressed-brass (Figure 14) cast-iron (Figure 15) Matlock marble

Figure 8.  Two candlesticks for household use. The left-hand scale is an American scale by L E Brown of Cincinnati, patented in 1878. The long pointer can be adjusted in its length so that the scale is tared for a bowl.

The right-hand tin-sheet scale is very simple and was so cheaply made that it seems probable that it was given away. The name Henley pressed into the pan looks like a trademark, and is probably the name of the donor, not the manufacturer. The graduations are pressed into the stalk below the pan, where they are in shade, and consequently are almost impossible to read.





Figure 9. ☞☞ The top of a Winfield candlestick. The floral design matches the design on the tube and the base. The raised dome of the peg is characteristic of Winfield's construction.



Figure 10. ☞☞ The top of the Winfield shown in Figure 13a, with the symbolic flowers of England (a rose), Scotland (a thistle) and Ireland (a shamrock). The top is attached to the rod by a collar soldered to the underside of the plate.

(Figure 16), glass (Figures 17 & 18), silver (Figure 23), ivory (Figure 19), wood (Figure 20) and tin (Figure 21).

Dating candlestick scales

Candlestick scales were made from January 13th 1840 onwards, when Winfield took out a design registration No. 170 to protect his idea for three years (Figure 2). Some scales do carry that date, but this is the date of the design registration, and not necessarily the date of manufacture. An approximate date can be obtained by looking at the graduated scale on the front of the tube, and referring to the period during which that particular postage rate applied; or from checking the dates during which a maker was known to have worked. Caution is needed when dating by postal rates, as some makers seem to have used a rate that was no longer current. (Figure 22a & 22b). Scales of English silver can be dated precisely by reference to the silver hallmark (Figure 23); otherwise, dating is often a difficult task. The vast majority of candlestick scales bear the postage rates for 1840-1865.

In the UK, the most prolific manufacturer of candlesticks was R W Winfield. The only other competitor to Winfield of any substance was the firm run by the brothers Joseph and Edmund Ratcliff. However, there are other names that appear on candlesticks, T Wharton & Sons and William Blews & Sons. Two candlesticks are known by Samuel Turner of Birmingham (STS on his other



Figure 11. ☞☞ A small J & E Ratcliff postal of cheap construction, only 4 1/2 inches (110mm) tall. The lacquered brass is all pressed to give a very decorative finish. The tube is covered with a lattice pattern with an infill of flowers and leaves. It is neatly soldered down the centre back. The tube is screwed into the pressed brass base. Postal rates 1/2 oz for 1d, 1 oz for 2d only.

Figure 12. ☞☞ A standard-height anonymous candlestick using construction methods that match those used by R W Winfield. The graduated plate is screwed onto the tube. The decorated cap is a push-fit on the tube. The base is decorated with a trail of convolvulus. It is probable that the base is pressed, but the base has a sheet of iron concealing the interior. The scale is black patinated with gilt stripes and was also made in gilt brass. Postal rates 2 oz for 1d, 1 oz for 2d, 1 2 oz [no price], 2 oz for 4d (1840-65).





Figure 13a. ☞ This Winfield scale has the symbols of Great Britain on the plate (Figure 10). The method of construction is the same as used by Ratcliff in Figure 11. The base has three shields interspersed with bunches of a rose surrounded by a thistle stem and shamrocks.



Figure 13b. ☞ Close-up of figure 13a, showing the impressed graduated cartouche and the name R W WINFIELD BIRM. The join where the tube screws into the base is clearly visible. The seam down the back is almost concealed by the raised polished lines decorating the matt gilt tube. Postal rates 1/2 oz for 1d, 1 oz for 2d, 1/2 oz [no price], 2 oz for 4d (1840-65).

Figure 14. ☞ Below is a comparison between a cast candlestick by Winfield and a pressed candlestick by Ratcliff. The scales are the same height and capacity but the Winfield weighs 255 grams, whereas the Ratcliff weighs only 100 grams. That is a big difference in the amount of brass needed.

Figure 15. ☞ This Ratcliff scale is 5 3/4 inches (135mm) tall. The collar (in fact made as part of the tube and not added later) is stamped MANUFACTURED BY JOS. & EDM. RATCLIFF. The tube is apparently soldered into the iron base. The cap is screwed to the top of the tube. The heavy iron base gives the scale good stability and a feeling of good quality. Postal rates 1840-65.





Figure 16. ☞ There are several surviving examples of candlesticks mounted on Matlock marble bases. These bases were a speciality of this Derbyshire village, although some of the stones were imported to add to the range of colours. Some are methodically organised, and some have a crazy patchwork of various stones called 'scrap-work' by the makers. The term 'pietra dura' is inappropriate for bases of British manufacture.



Figure 17. ☞ Ratcliff competed with Winfield's all glass tubes by producing these elegant bell-shaped bases. They are extremely rare. Postal rates 1840-65.



Figure 18. ☞ Winfield produced their own bell-shaped glass base in green, and went one better. They put an additional collar of gilt ivy leaves round the base. Unlike the best of S Mordan's work, we do not know where these scales were retailed, but it would be logical to assume that they went into the smart shops in London on Bond Street, Audley Street and Regent Street.



Figure 19. ☞ This ivory candlestick has the name W I E Rooke stamped into the base, but he is assumed to be the turner. A machine to do intricate turning was invented in about 1860, and thereafter there was a craze for elaborately turned objects. Postal rates 1840-65.

postal scales) (Figure 30). Were his candlesticks made by Ratcliff? All known makers of candlesticks worked in the Birmingham area, where they had ready access to springs made by Salter. There were many competent scalemakers in London, yet none of them appear to have made candlesticks. I wonder why?

Robert Winfield

Robert Walker Winfield operated from 1829 and was located in Birmingham on the Baskerville Estate. His company is listed as brass and copper founders, tubemakers, makers of metal bedsteads, chairs, gas fittings, etc. This activity continued until the late 1890s when the company went bankrupt. The 1840 date shows how quickly Robert Winfield exploited the market for postal scales.



Figure 20. ☞ Winfield did some 'mixing and matching'. The pretty ivy decoration overlapping the ebony base is also seen on their green glass candlesticks. Postal rates 2 oz for 1d, 1 oz for 2d, 2 oz for 4d, 3 oz for 6d and 4 oz for 8d, (1840-65). The cap on this example is unusual in being shaped like a bud, but it is appropriate to both this and the green scale above.

Winfield manufactured all types of scales, including the popular sovereign rockers.

According to the biographer of Mr Compton (of the famous Compton electric lamps), the person responsible for the expansion of the Winfield business was Mr Charles Torr, an employee, who subsequently became its Managing Director. Mr Torr held this position until the company went into liquidation. Sadly, and shortly after the liquidation, Mr Torr had a heart attack and died. When the mortician was preparing his body for burial, it was discovered that Mr Torr was a woman!

Winfield's second design registration N° 1569 of 18th October 1848 was for a cylinder made of Bristol milk-glass. He extended his range of glass candlesticks without further protection, making superbly coloured candlesticks of turquoise, red, blue, and green (Figure 18). The glass was occasionally ornamented with bands of gilt brass or wreaths of gilt ivy leaves (Figures 24a, 24b & 24c).



Winfield made numerous designs without taking out protection, usually utilising their patent tubes, made by extrusion [that is, without a seam] (Figures 1 & 25).

The third scale design registration was N°. 3267 of 25th May 1852, a brass tube with a spring in tension. The stick was above average height, being 10 1/2 inches (265mm) tall.

Winfield employed his special patented pressing technique to produce an effect on the brass known as *silk brocade* (Figure 34 in Part 2). These brocaded scales could not have been made any earlier than the late 1850s (the date of his patent). Some examples were gilded or lacquered over the brocade, and some

Figure 22a. <<< The anonymous little candlestick has a design registration of 1895 in minute letters under the pan. The maker can be identified as R Hodges, an otherwise unknown maker. Postal rates 1/2 oz for 1d. and 1 oz for 2d only.



Figure 21. >>> The Criterion tin candlestick came in at least three variations - the one on the right with the design registration number (allocated to A Barker in 1928), the version with the Criterion diamond trademark (owned by Setton & Durward) and the left-hand version without the trademark but with an extra base made of composition. There are no postal rates, just the weight 0-6 oz.



Figure 22b. >>> Close-up of Figure 22a. A very Victorian decoration! Why was Hodges showing postal rates that finished in 1871 on a scale not designed until 1895? Theories to the author, please!

Figure 24a. // This magnificent display of three glass candlesticks all exhibit the characteristics of the Winfield design registration of 1848. The one on the left has W Blews & sons on the letter plate whereas the other two have R W Winfield on their letter plates. Postal rates 1840-65.

Glass is another material that is difficult to maintain, as the gilding tends to come off when cleaned.



were painted; sadly the paint tended to chip off.

Joseph & Edmund Ratcliff

Brothers Joseph and Edmund Ratcliff were also brass founders based in Birmingham. Their offices were at 59/60 St Paul's Square. They, too, had a broad range of products, including chandeliers, gas fittings, letter clips, and (real!) candlesticks.



Figure 23. // Levi & Salaman solid silver candlestick hall-marked L & S 1904. They took out a design registration N° 308820 for this elegant shape in 1897. The graduated plate is made of artificial ivory (celluloid), a material that is very prone to being wiped clean by the conscientious housewife, leaving a blank sheet! Weight only, 0-12 oz.



Figure 24b. // The letter plates, showing left-hand plate stamped lettering REGISTERED SEPT' 5th 1848 R W WINFIELD BIRMINGHAM and the right-hand plate stamped W BLEWS & SONS BIRMINGHAM WARRANTED CORRECT.



Figure 24c. // The underside of two of the glass candlesticks, all three of which had exactly the same construction method. The brass is attached to the glass by a white cement.

Figure 25. // Winfield scale. Postal rates 1840-65. The cap has the special Winfield knurled edge, as if any owner would wish to unscrew the cap!



They manufactured several types of scales and produced distinctive and original weights. They are featured in trade directories from 1839 to 1864. Joseph died in 1862 and Edmund continued on his own until 1881. They did not take out any protection against plagiarism, either patent or design registration. A candlestick made by Ratcliff (circa 1860) graduated in grams and destined for the French market, emphasised their entrepreneurial abilities (Figure 26a & 26b.)

The Victorians liked compendiums, and cast candlesticks were ruggedly built to act as paper weights as well as scales. The Victorians also liked patriotic objects, so Ratcliffs made a base with the flag of St. George at each corner of the base (Figure 28). A puzzling Ratcliff has an old thermometer screwed to the rear of the tube (Figure 27).

Both Winfield and Ratcliff not only made scales which bore their names but also made a vast number of items specifically for general and other specialist retailers of office and desk set suppliers. Many of these latter production-runs resulted in scales with no maker's name whatever. Both may have used individual parts made by another firm. Evidence for this is a candlestick by Ratcliff; and a scale with an identical base and letter plate by Winfield. Only the central column shows any material differences. Did Winfield copy from Ratcliff - or the other way round? - Very unlikely. Did Winfield make for Ratcliff? Or visa versa? Or did a third party make the same parts for both of them? I have also seen two identical



Figure 26a. // This Ratcliff candlestick was seen in France. It was graduated in grammes and exported. The base is iron.



Figure 26b. // Close-up of Figure 26a, showing the grammes from 0, 10, 20, 30, 40, 50, 60. The two positions for 7 1/2 and 15 grammes (on the left side of the graduated plate) prove that it was intended for use in France.

candlestick scales, except that one bears the Winfield logo and other the Wharton logo.

Thomas Wharton

Thomas Wharton & Sons of 4 Great Charles Street, Birmingham made small fancy articles in brass, bronze, ormolu, papier-mâché and japanned wood according to their advertisement of 1862. They were in business until at least 1876. Their wares included candlestick scales and ladder scales, pen racks and cleaners (Figures 32 & the Cover.) It has been difficult to confirm that they undertook any manufacturing activity, and it is more likely that they were simply retailers of stationer's sundries which, in those days, would most certainly have included letter scales of all types.

On my many trips to the United States, I visited many collectors, a few of whom have Wharton candlesticks which are identical to their English counterparts except that the scales are graduated in US cents. UK manufacturers like Wedgwood and Masons (in the field of ceramics) made products for British and American retailers

who had them transfer printed with their own trademark during manufacture. Wharton is assumed to have done the same. I have seen a desk set in America which is identical in every way



Figure 27. J & E Rateliff candlestick with a thermometer screwed to the rear. The thermometer is much older than the 'stick, and has screws attaching it that are not the normal Rateliff screws, so this is probably an extra added at some time during the life of the 'stick. As the thermometer plate is too long, it overlaps the stamped collar with their name on it, giving the piece an amateur look. Two 'sticks are known with thermometers on them. Postal rates 1840-65.

Figure 28. J & E Rateliff with the flag of St George at each corner of the base. Postal rates 1840-65. Cast brass base.

Figure 29. The top of a Rateliff candlestick.



Figure 30. Candlesticks by Samuel Turner are very rare. The collar has stamped S TURNER BIRM^o MAKER. He might have meant maker of other types of scales, not candlesticks! Postal rates 1840-1865. Made between 1858-1865.





Figure 31. Anonymous candlestick with an extremely small, light base. The 'stick will topple over with the slightest knock, and probably did not live on a desk. It seems more likely that it lived in a desk or travelling case, and was only taken out when needed. Postal rates 1840-1865, capacity 8 oz.



Figure 32. The tube of the candlestick shown on the Cover. The two grooves that are thought to characterise Wharton's work show distinctly. The seam is visible on the right side of the lower tube. The patina has worn away, showing that the black patina is not bronze but is a surface finish on brass.



Figure 33. The top of an anonymous desk set candlestick with postal rates 1 oz for 1d, 2 oz for 1½d, 4 oz for 2d, 6 oz for 2½d, 8 oz for 2d (1871-1897). This late period is extremely rare on candlesticks.

to one that I possess, except that the name Wharton does not appear. In its place is the name of a well-known American manufacturer. (Note: some of the candlesticks made by Wharton are distinguished by two concentric rings which appear around the bottom of the tube. This may well be an indication that if, as suspected, Wharton used an outside maker to supply his tubes, the rings may have been to distinguish his articles from those of his two major competitors.)

Winfield latterly used his patented extruded tubes without a seam whereas the tubes of candlesticks made by Ratcliff (Figure 29) and Wharton (Cover) are made out of a flat sheet of metal soldered together along the leading edge to make a tube.

Continued in the next issue....

Postal Rates for Period December 1839 - October 1871

Weight in Oz.	5.12.1839 to 10.1.1840	10.1.1840 to 1.4.1865	1.4.1865 to 5.10.1871
½	4 pence [d]	1 penny	1 penny
1	8 pence	2 pence	2 pence
1½	---	---	3 pence
2	1 shilling & 4 pence	4 pence	4 pence
3	2 shillings	6 pence	---
4	---	8pence	---
	then 8 pence per oz.	then 2 pence per oz.	then 1 penny per half oz.
	up to 16 oz.	up to 16 oz.	

Sandy Harris, Scale Inventor

BY KURT BEYREIS

Soon after the doors opened at the Silent Auction at the 2005 annual ISASC Convention in Washington DC, there was a buzz of excitement at the end of one of the auction tables. I walked over to see what was happening, since there are always scales at the Silent Auction of every Convention that are unusual and exciting. It was the Buckelew and Waterman scale shown in figure 1. I had never seen anything like it and neither had most of the people gathered around the scale.

This half roberval and steelyard shop scale was patented in the United States on July 7, 1863 by Sandy Harris, a one-time grocery clerk, later employed at the Philadelphia Customs House. It is quite large for a scale with a capacity of 4 lbs, measuring 14 ins long, 11 ins high and about 6 ins wide. The scale itself weighs over 13 pounds and appears to be built to handle a capacity far in excess of the indicated 4 pounds which I will discuss later. The base is cast iron and the beam, poise and pan are brass.

The manufacturers, Buckelew and Waterman, had their scale shop at 716 Market Street in Philadelphia in 1869 and produced and sold scales for only a few years, probably starting in 1867 and continuing to 1869. It appears that John D. Buckelew was a wealthy farmer from New Jersey who provided the capital for the

venture while Albert G. Waterman was the actual scale maker. Given the short period of time that they produced scales, it cannot be expected that there will be many examples of their scales still available today.

The most unique feature of this scale and the basis for the patent is the mechanism of the poise movement along the beam and its interaction with the pointer for the weight indicator. As shown in figure 2 from the actual patent, there is a cam that allows the poise to move along the beam in an arc more or less parallel to the beam.

The pointer, shown in figure 3A, has a separate pivot point (F) from the pivot point for the poise(D). The pointer is grooved and slides through a slot in the poise, guided by a pin in the center of the poise at point (G). The net effect is to convert the linear movement of the poise into a circular movement for the pointer to indicate the weight on the outside arc. This results in an



Figure 1. Buckelew & Waterman scale with insets below showing the name and patent date information that is stamped into the arched beam.

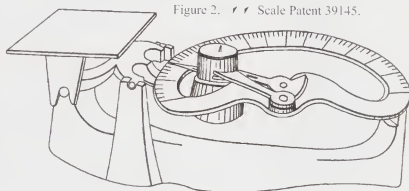


Figure 2. Scale Patent 39145.

almost uniform scale on the outer arc, making the graduations nearly equal over the 4 pound range.

In fact, after examining the geometry of the scale mechanism, only a ratio of 0.5 of the distance between the pivot points of the poise (D) and the pointer (F) to the distance between the pivot point and the pointer where it comes in contact with the center of the poise (G) will result in a uniform accurate weight scale along the outside arc of 180 degrees. This is shown in figure 3B. It should be noted that the inventor stated in the patent that this ratio should be $\frac{29}{57}$ or 0.5405. However this will result in a slight distortion of the graduations on the graduated arc



Figure 3A. ▲ ▲

If the poise and the pointer were on the same pivot points the resulting graduations would be far apart at both ends of the weight range, say between 0-1 and 3-4 lbs and very close together at the middle of the range from 1 to 3 pounds. When the poise is moved $\frac{1}{4}$ of the distance of the total length of the beam the indicator should show 1 lb. Applying geometry to this case, the results show that the weight indicator would be at just over 60 degrees from the line parallel to the beam and the base of the arc so that the first pound would take over $\frac{1}{3}$ of the arc and the second pound would take only $\frac{1}{6}$ of the arc with the resulting compression of the weight graduations.

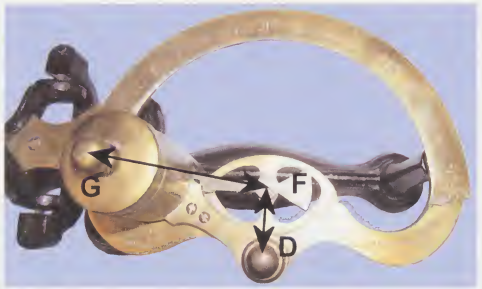
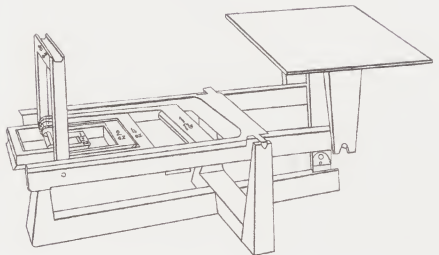


Figure 3B. ▲ ▲

The poise also has a removable cap, so that by adding or removing lead, the scale could be zeroed very easily. The scale has no loose weights and is very smooth in operation and easy to use.

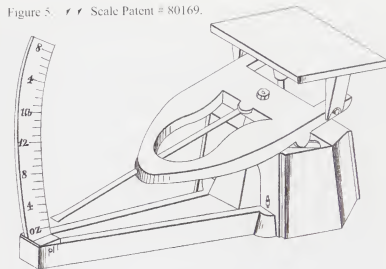
The scale seems to be accurate within only about +/- an ounce or two over the 4 pound range and therefore could have only limited application; maybe in hardware stores or other uses where this level of accuracy would be acceptable. The fact that the poise does not move in a straight line along the beam will put torque on the knife edges and the apparent looser tolerances required to make the poise/indicator mechanism work smoothly all contribute to limit the accuracy and usefulness of the scale. This also probably explains the reason for the apparent over-engineering of the scale. These design features resulted in having to calibrate and mark the graduations on the arc after the scale was manufactured. The inventor in writing about these

Figure 4. ▲ ▲ Scale Patent # 60184.



factors in the patent puts it as follows; *...but any error in this, as well as any trifling departure from regularity in the operations of the weights and hands, is overcome in graduating the arc, which should be done when all else is complete, and always with the aid of positive and correct weights.* All of these factors probably contributed to the short period of manufacturing and most likely resulted in a very limited production run.

Figure 5. // Scale Patent # 80169.



Sandy Harris received three more patents for scales over the next ten years. On December 4, 1866 he received a patent for a half-roberval and steelyard scale, shown in Figure 4, which is based on the principle of “turn-over” poises. In the no-load balance position, all the poises were turned towards the weighing plate. As shown in the patent drawing, the poises ranged from 1 pound to one ounce resulting in a capacity of two pounds. When an object was placed on the plate the poises would be flipped out until the object was balanced. It should be noted that the principle of “turn-over” poises had been used on English folding money scales for many years prior to this patent. Later use of this principle included the Avery bread scale and some American shop scales, which used a flip-over poise to tare the scale when a loose pan was on the weighing plate.

His next scale patent was issued on July 21, 1868. A drawing from the patent of this scale is shown in Figure 5. This scale has the appearance of a steelyard but actually is a half-roberval and pendulum type. From the patent drawing, the scale appeared to have a 1½ pound capacity by ounces.

Harris’s final scale patent was issued on August 5, 1873, and is shown in Figure 6. This scale utilized two beams; one was immovable (D) fixed to the scale base and held the cylindrical poises when they were not being used. The other beam (C) was the actual balance beam used for weighing objects. The two beams were nearly touching and had a split rod between them to allow separate poises to be slid over from the fixed beam to the balance beam as required to balance the object to be weighed. From the patent drawing the scale appeared to have a 1½ pound capacity by ounces. To my knowledge this scale was never manufactured.

All factors considered, Sandy Harris contributed some unique scale designs which had unusual mechanisms, albeit with some practical limitations. While it appears that most of his balances did not make it into the mainstream of scales-manufacturing, they still show us the ingenuity of inventors to find yet another way to weigh objects.

Even with all its faults and limitations, the Harris-designed and Buckelew and Waterman-built scale has become one of my favorites that I will enjoy for many years to come.

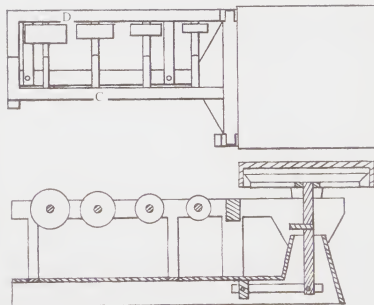


Figure 6. // Scale Patent #141556.

Acknowledgements

Special thanks go to Steve Beare and Jan Berning for their help in providing background information for this article.

Buckelew & Waterman - A Short-Lived Philadelphia Business

BY STEVE BEARE

I had not yet seen 'the scale' at the silent auction of the 2005 Washington ISASC scale convention. Kurt Beyreis excitedly showed me 'the scale' and asked if I had ever heard of the unusual Philadelphia maker Buckelew & Waterman. I confidently replied, *Yes, it is a real business name, and not just fabricated for the silent auction.* That is all Kurt needed to hear to decide that 'the scale', stamped BUCKELEW & WATERMAN PHILADA. PATD JULY 7, 1863, must go home with him.

When I returned home and checked my growing directory of 19th-century Philadelphia scale makers, I was somewhat embarrassed to find that all I had under this entry was: BUCKELEW & WATERMAN, 1869, 716 Market.¹

I then began to aggressively scour 19th-century Philadelphia city directories, decennial U.S. Census reports, and contemporary periodicals for more information, and slowly built up a better picture of this incredibly short-lived and virtually unknown scale business. To my surprise, I found that there are only two Philadelphia city directory listings for the firm of Buckelew & Waterman:

BUCKELEW & WATERMAN (John D. Buckelew & Albert G. Waterman)

scales

1868 716 Market and 515 Callowhill

1869 716 Market

This novel scale was first shown at the annual Meeting of the American Pharmaceutical Association, held in New York September 10-13, 1867. *Buckelew [sic] & Waterman, Philadelphia, exhibited a balance called the arc scale, which has a stationary weight working on a pivot, and indicating both troy and avoirdupois weights.*²

Buckelew and Waterman advertised only once, March 14, 1868, in the weekly *Scientific American*, and did not mention their arc scale. *Buckelew and Waterman, 716 Market St., Philadelphia (city Sealer's office), Manufacturers and Dealers in weighing scales, weights and measures, will take agency for some saleable articles.*³ This ad established that they were co-located at the city sealer's office in Philadelphia in 1868 (see George W. Shaffer below).

U.S. patent number 39,145 was issued for this scale to Sandy Harris, Philadelphia on July 7, 1863. It would appear that Buckelew and Waterman later purchased the patent rights from Harris, and made this scale sometime between 1867 and 1869, the only years they were in business together.

Who was John D. Buckelew?

Surprisingly, John D. Buckelew is not listed as a resident in Philadelphia directories from 1850-1880. However, under the Buckelew & Waterman entry, the 1868 and 1869 directories give Buckelew's hometown as Jamesburg, New Jersey, a rural farming community (Figure 1).

John D. Buckelew [sic] first appears in the 1850 census for Monroe, NJ (a small town near Jamesburg), age 18, occupation Farmer, at home with his father father, James, mother, and two brothers and two sisters.⁴ James Buckelew was obviously prosperous, as his real estate was valued at \$60,000 at the time. There were a dozen hands in the household, including five blacks.⁵ In addition to farming, a few of

Buckley Thomas, laborer, h 2214 Richmond
Buckley William, carpenter, h 1246 N 10th
Buckley William, laborer, h 2213 Richmond
Buckley Wilson P., clerk, h 1254 N 10th
Buckleschall Charles J., engraver, h N 46th n
Kosgen, W P
Bucke Nicholas, junk, Passyunk av e German
Buckelew John D. (Buckelew & Waterman), h
Jamesburg, N J

BUCKELEW & WATERMAN

(John D. Buckelew & Albert G. Waterman)
scales, 716 Market & 515 Callowhill
Bucker Gabriel, laborer, h r 706 N Front
Bucker Charles F., superintendent, h 162 St John
Bucker Charles F., Jr., salesman, h 462 St John
Bucker Joseph, barrel, h 610 Jefferson
Bucker Louis, tanner, h 1417 Briston
Buckhart Alexander, wiremaker, h 325 Green
Buckhart Robert, carpenter, h 671 N 11th
Buckhoiser Frederick, patternmaker, h 1735 Pearl

Figure 1. ↗ Gospill's Philadelphia Directory for 1868

James Buckelew's many business activities were producing drain tiles and bricks, running a gristmill, and establishing the First National Bank of Jamesburg.⁶ The town of Jamesburg was named after James Buckelew, and there is even an annual Buckelew Day to honor the man who put Jamesburg on the map.⁷

The future scale maker next appears in the 1860 census for Monroe, NJ as John D. Buckilew [sic], age 28, Farmer, real estate \$5,000, personal estate \$4,000. He was still living with his father and mother, whose real estate was now valued at an enormous \$250,000, with a personal estate of \$70,000. In addition to a younger brother, Lemuel, a Lumber Merchant, and younger sister, Mary, there were four servants and five laborers in the household. Next door lived a married older brother, Isaac, Civil Engineer, who went on to become a Director of the New Jersey Railroad.

James Buckelew died in Jamesburg on May 30, 1869, aged 68 years.⁸ As John Buckelew was the only son who was a farmer, he would have taken on many additional farming and business responsibilities after his father's death. This appears to have abruptly ended his short-lived scale business with Waterman, who continued alone for only a brief time as a scale maker (see Albert G. Waterman below).

By the 1870 census for Monroe, NJ, John D. Buckelew is living in his own house (Figure 2), age 37, Farmer, married to Catherine E., age 33. Real estate \$80,000, personal estate \$25,000. In the 1880 census for Jamesburg, NJ, he is listed as Syrup Manufacturer, married to Katherine E., with two servants. He is next listed as a 68-year-old widower in the 1900 census, living with his brother in Monroe, NJ. Finally, he is listed in the 1910 census for Jamesburg, NJ, age 78, boarder at Lakeview, the family home.⁹

John Buckelew's role in the short-lived Buckelew & Waterman scale partnership appears to have been a financial one, and Waterman was the scale maker.

Albert G. Waterman

The 1860 Philadelphia census for the 8th Ward lists Albert Waterman, age 20, and brother John, age 10, living at home along with three other brothers and a sister, all born in PA. Their father was A. G. Waterman, age 60, broker, born in VA, real estate \$20,000, personal estate \$1,000, married to Emily, age 49. As evidence of Waterman's financial status, they had three domestic servants and a coachman. Albert senior died in 1862 in Philadelphia.¹⁰

Albert G. Waterman first appears in the Philadelphia city directories in 1861 as clerk, living with his father Albert G. at 1616 Chestnut. He is listed as clerk through 1867. The 1868 and 1869 directories show Albert G. Waterman (Buckelew & Waterman), at 716 Market. In 1870 Albert is listed alone, scales, 716 Market. The 1870 Philadelphia census for the 15th Ward lists Albert Waterman, age 26, and John Waterman, age 22, scale manufacturers, both born in PA, with \$10,000 personal estate each. Albert's last listing in the Philadelphia city directories is in 1871, hardware, 716 Market, and his younger brother John is listed at the same address as salesman. The two brothers evidently left Philadelphia during 1872.

The credit agency R. G. Dun, forerunner of Dun & Bradstreet, gave Waterman a brief but positive credit report: Albert Waterman, Scales, 716 Market St. August 19, 1870. In good standing and credit, pays promptly, estimated worth \$8-10M. No change on December 1, 1871 and May 9, 1872.¹¹

By the 1880 census, Albert G. Waterman is located in Manhattan, age 35, still single, and the Waterman census fingerprint is that his father was born in VA. In 1900, both Albert and John Waterman were still single and living in Manhattan, and listed as Metal Manufacturers; the 1900 census indicates that Albert was born in June 1839, and John was born in March 1847. Albert Waterman's scale manufacturing career



Figure 2. ▲▲ The Inverness Mansion, home of John Dunn Buckelew, Jamesburg, NJ

was remarkably brief, just four or five years.

Other Buckelew & Waterman Scale Connections

There are several other people who may have been connected with the manufacture of the Buckelew & Waterman scale. These include the inventor, Sandy Harris, a sealer, George W. Shaffer, and three well-known scale makers who were either at or quite near the Market Street address.

Sandy Harris was issued patent number 39,145 on July 7, 1863 for this novel scale, and later must have assigned it to Buckelew & Waterman. One would expect to find clear evidence of Harris's obvious aptitude for invention in either the city directories or census reports, e.g. with the occupation machinist or scale maker. Such is not the case.

Sandy Harris is first simply listed in the Philadelphia directories at 1 Sansom from 1849 to 1851. Then, as U. S. Storekeeper at 24 Walnut from 1852 to 1855, with no listing in 1856 and 1857. Finally, S. Harris, customhouse from 1858 to 1861, with his home at 1341 Chestnut.¹³

From 1862 until 1886, his listings read Sandy Harris, liquors, 31 S. 17th St. [this is located at the corner of 17th & Chestnut]. He died sometime during 1886, as the 1887 city directory lists only his widow Margaret.

The census reports are even more baffling: Sandy Harris was born in North Carolina around 1807 and came to Philadelphia by the 1840 census. He was listed as a gentleman in 1850, a lawyer in 1860, a liquor dealer in 1870, and a saloonkeeper in 1880.¹⁴ There is nothing in the census or city directory information to indicate this Sandy Harris had a background consistent with a scale inventor. This is most unsatisfying and troubling to a researcher, and suggests that I may have found the wrong Sandy Harris.

To understand if there is a solid connection between the lawyer/liquor dealer Sandy Harris and the inventor by the same name, I checked out all witnesses to Harris's four scale patents for both text and drawings. For example, J. W. Mister was a witness to the drawing of the 1868 Harris scale patent. James W. Mister is found in the 1870 census for Washington, DC as a 22-year old draughtsman. This makes good sense, but there is no obvious connection to the Sandy Harris on S. 17th St. However, Sam'l P. Jones, Jr. witnessed the text of the same patent application. Samuel P. Jones, son of a well-known Philadelphia bookbinder, is listed as an alderman in the 1867 to 1871 Philadelphia city directories. His home was at 16 S. 17th, very close to Harris's liquor business at 31 S. 17th. A local alderman makes an excellent patent application witness, so this starts to help solidify the link.

For Harris's last patent, granted in 1873, there were two witnesses to the patent: J. W. Hampton, Jr., and Chas. F. Giller. There is a John Hampton, age 26, Custom Broker in the 1870 Philadelphia census, who is listed in the 1871 city directory as John W. Hampton, Jr., custom house brokers, 402 Library. Likewise, there is a Chas. F. Giller, age 19, clerk, custom house broker, in the 1870 Philadelphia census, and he is listed in the 1871 to 1874 city directories as clerk, 402 Library. Clearly, Giller clerked for Hampton's firm. Since Harris had previously worked at the Custom House, this is a possible connection. However, Hampton is also listed as a notary public at 402 Library in the 1873 city directory, and a notary public makes more sense as a witness than a Custom House connection.

The most compelling argument for the Sandy Harris lawyer/liquor dealer/sealer



Figure 3. NMAH Buckelew & Waterman scale-side view.

inventor is for the two witnesses to Harris's 1863 patent for the Buckelew & Waterman scale: Wm. Lacey and A. H. Palmer. William Lacey is listed in the city directories from 1862 to 1864 as head of the Philadelphia & Boston Ice Co., N.E. Chestnut & 17th. Similarly, A. Harry Palmer was a clerk at N.E. Chestnut & 17th in 1862 and 1863, and obviously worked for Lacey. Why were an ice dealer's and his clerk picked to witness this patent unless Harris knew them? The directories show that Sandy Harris had started his liquor business at Chestnut & 17th by the end of 1861, and he remained there until his death in 1886.



Figure 4. NMAH Buckelew & Waterman scale-top view

George W. Shaffer appeared at 716 Market in the 1868 to 1873 Philadelphia city directories as sealer of weights & measures. He is also listed in the 1869 Gopill business directory under the commercial heading Scales, Weights, and Measures at 716 Market. Shaffer was at the same 716 Market address as Buckelew & Waterman in 1868 and 1869, and was most likely involved in the manufacture of their patented scale. He appeared in the 1860 census, 20th Ward, Philadelphia, age 48, Machinist, born in PA, as was son William, age 12.

Henry Troemner was at 710 Market during the entire period Buckelew, Waterman and Shaffer were at 716 Market, and Fairbanks & Ewing, agents for E. & T. Fairbanks, were at 715 Market from 1859 until 1872.

John C. Dell, a major Philadelphia scale maker, was at 515 Callowhill in 1866. Charles Mehler, another Philadelphia scale maker, was also listed at this address in 1867, and the Mehler & Dell partnership was at this address in 1865. Buckelew & Waterman were at 515 Callowhill as well as 716 Market in 1868.

Another Buckelew & Waterman Scale

Just as I was finishing this article, I came across a note from a visit to the Smithsonian's scale collections in March 2004. Among other interesting scales, I had seen a Buckelew & Waterman scale and noted the July 7, 1863 patent date. I immediately contacted Ann Secger, Deputy Curator, who quickly located catalog number 308,930 (Figures 3 and 4). Like the Beyreis example, this scale is stamped "BUCKELEW & WATERMAN PHILADA." and "PATD JULY 7, 1863". It is located in the Division of Medicine and Science Collections of the National Museum of American History, and is believed to have come from the Patent Office.¹⁶

The NMAH Buckelew & Waterman scale has the original ornate red and gold paint detailing, plus a sliding poise not included on the Beyreis example. The calibrations on the arc are also different, in both avoirdupois and Troy pounds, which indicates additional use as a gold scale.

Fortunately, our intrepid editor Jan Berning had already located a later scale patent with an improvement to the 1863 Harris patent. U.S. Patent 78,532 (Figure 5) was granted to Louis A. Matos of Philadelphia on June 2, 1868, and is clearly the design used for the NMAH example (Figures 3 and 4). Matos most likely submitted a modified Buckelew & Waterman scale to the Patent Office as a working model along with his patent application. This would explain the Buckelew & Waterman mark with the old 1863 patent date. It is unknown whether any other Matos versions were built.

The 1868 Matos patent discussed the shortcomings of the 1863 Harris patent. Matos wrote: *I have discovered in my business of druggist, that the aforesaid scale or balance weighs against the buyer. The buyer does not get the quantity of fluid indicated by the index finger AB, but is deficient in quantity equal to the weight of the vial. To correct the inaccuracy, I fix a horizontal bar, D, to the side, and on the vernier end of the scale, a*

sliding weight, *E*, takes on this bar *D*.

It is remarkable that Louis Matos, a 30-year old druggist from Cuba, came up with this simple, clever modification very shortly after the scale was first introduced. It suggests that the September, 1867 American Pharmaceutical Association exhibition of the Buckelew & Waterman scale, based on the 1863 Harris patent, found at least one receptive druggist.

The 1900 Philadelphia census shows that Louis A. Matos emigrated from Cuba to NY in 1856,¹⁷ and was a private in the NY Volunteers Regiment from April 1861 to May 14, 1863.¹⁸ Louis A. Matos first appears in the Philadelphia directories as druggist in 1865, and continued to be listed either as a druggist or chemist until his death in 1900.¹⁹

Acknowledgements

The author would like to express appreciation to Jan Berning, Kurt Beyreis, Tom Bodall-Jamesburg Borough Historian, Ann Seeger-NMAH, and the entire staff at the Hagley Library for invaluable help.

Notes

1. Steve Beare. *Directory of 19th Century American Scale Makers*. In preparation.
2. *Druggists' Circular and Chemical Gazette*, Vol. 11, October 1867, page 235. Other scale manufacturers who exhibited were Henry Troemner of Philadelphia (in addition to prescription balances, there were four patterns of Hoffman's patent balance, one furnished in elegant style, the frame of the box being solid brass, heavily plated with gold, while the sides and top were of plate-glass, showing the working parts of the balance, which were of polished brass and steel), Becker & Sons of Hudson City, NJ (four patterns of their excellent balances—three adapted for prescription use, sensitive to the fiftieth of a grain, while the gold scale with ten ounces in each pan would turn as quickly—we believe them to be equal in accuracy to any made in Europe), V. W. Brinkerhoff, New York (exhibited five patterns of counter balances, and four prescription balances), and W. H. Schieffelin & Co., New York (a handsome cased prescription balance, also a small Beranger balance for the same purpose). See also *American Journal of Pharmacy*, November 1867, page 568 for a full reprint of the *Druggists' Circular* report.
3. *Scientific American*, Volume 18, No. 11, March 14, 1868, page 167. The charge was one dollar a line, and evidently Buckelew & Waterman felt a one-time appearance of their three-line ad was sufficient.
4. All census information is through the online index of ancestry.com. Index spellings are retained, even if incorrect, to help relocate census images. Many local public libraries and educational institutions now have online subscriptions to this valuable database under the name of either ProQuest or HeritageQuest.
5. By 1857, James Buckelew, Esq. owned 3,200 acres in Jamesburg. The value of crops was estimated to be \$20,000; in grass 350 acres, corn 350, oats 200, wheat 100, rye 50, plus 800 in pasture. The rows of corn in one direction were nearly a mile in length. *New York Daily Times*, August 14, 1857.
6. See <http://www.jamesburg.net/jha/savehistory/historyprofile.html>
7. In 1847, because he was incensed by the refusal of authorities to admit a colored boy to the township school, Mr. Buckelew built a brick schoolhouse and declared it open to all children. At the dedication ceremonies, the people acclaimed it as the James B. or Jamesburg School. After this, the stop on the railroad and the town became known as Jamesburg. Louise Johnson Kerwin. *A House Of Many Windows "Lakeview". The Home Of James Buckelew In Jamesburg*, New Jersey. NJ, 1981. <http://www.jamesburg.net/jhistory.html>
8. *New York Times*, June 1, 1869, page 5.
9. Lakeview is the Buckelew Mansion on Lake Manalapan, NJ, and has been preserved. The original farmhouse dates to 1685, with many additions following James Buckelew's marriage in 1829. See <http://jamesburg.net/jha/savehistory/historyprofile.html>.
10. The author would like to thank Tom Bodall-Jamesburg Borough Historian, for the use of this photograph. See <http://jamesburg.net/jha/history7.html>.

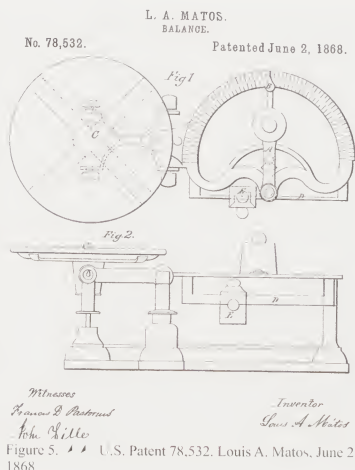


Figure 5. U.S. Patent 78,532, Louis A. Matos, June 2, 1868.

11. FamilySearch International Genealogical Index
12. R. G. Dun & Co. Collection, Philadelphia, Vol.16, page 238.
13. A storekeeper was a politically appointed job to oversee the customhouse vaults. The Philadelphia Custom House was located on Chestnut above 4th. Sandy Harris was listed as customhouse officer, 1341 Chestnut, in the 1860 McElroy city directory.
14. Sandy Harris is first listed in the 1840 census, Chestnut Ward, born in North Carolina [no age or occupations were given until the 1850 census]. He appears in the 1850 census, South Ward, age 44, Gentleman, born in NC, married to Margaret, age 47, born in Maryland, two servants. Then in the 1860 census in the 9th Ward at 1341 Chestnut, Landy [sic] Harris, age 52, lawyer, born in NC, married to Margaret, age 51, born in MD, daughter Emma, age 5, born in PA, one servant. In the 1870 census for the 9th Ward, he is listed as a liquor dealer, age 62, b. NC, married to Margaret, age 67, b. MD, with daughter Amy, age 15, born in PA, one servant. By 1880, still in the 9th Ward at 31 S. 17th, Sandy Harris, age 74, is a saloon keeper, b. NC, married to Margaret, age 80, b. MD, one servant.
15. William Lacey is listed as Ice Dealer in the 1850, 1860, 1870, and 1880 Philadelphia censuses. In the 1860 census, Lacey and Harris were 9th Ward neighbors, separated by only 9 pages of entries in the 434-page enumeration for this ward.
16. Grateful appreciation is expressed to Ann Seeger, Deputy Chair, NMAH Division of Medicine and Science, in locating this scale and sharing information and photographs from the NMAH Collection.
17. Immigration records from ancestry.com show that Louis A. Matos also arrived in the port of Philadelphia in 1863 and 1873, and made at least two other voyages back to Cuba. On March 5, 1867, Louis A. Matos, age 29, Engineer, arrived in NY from Cuba, with his wife Sarah E., age 26, and son Louis J., age 3 (NY Passenger List, Steamer Fah Kee, port of embarkation St. Jago, Cuba). Louis A. Matos, age 36, also arrived in NY from Cuba on Nov. 25, 1873 (NY Passenger List-SS Crescent City, embarkation Havana, Cuba). He submitted a declaration of intent on Sept 30, 1863, and was naturalized in Philadelphia on October 17, 1873.
18. 1890 Veteran's schedule, U. S. census.
19. The 1870 census for the 15th Ward of Philadelphia lists Louis A. Matos, age 33, Drug Store, born in Cuba, married to Sarah E., age 25, born in PA, parents born in England, and son Louis J., age 3, born in PA. In the 1880 census, Louis is still listed as a druggist, and has two more children. The 1900 census gives his birth as April 1837, occupation Chemist, and married to Sarah for 37 years. In 1910, Sarah Matos is listed as a widow, living with her son in Swarthmore, a Philadelphia suburb, and is still living in Swarthmore at age 86 in the 1930 census.

Orlando W. Bedell and the Zenith Egg Grading Scale, Part 3

BY CHARLEY AMSBAUGH

Editor's Note: This is the final part of a three-part article.

As discussed in the first two parts of this article (pages 3056-3059 and 3081-3084), the materials used for the base and the t-shaped upright for the Zenith Egg Grading Scale changed over the years, evolving from pot metal to cast iron for the base and from pot metal to formed aluminum for the T-shaped upright and graduated scale. The color of the base also changed over time, evolving from unpainted gray to dark blue to light blue to painted gray (sometimes light, sometimes dark gray, depending on what was available). The counterweight is about the only major part of the Zenith that never changed, either the material used to make it or the color - it has always been made of cast iron and has always been red in color. The labeling used for the Zenith also evolved over time, as depicted below in figures 2 - 8, first as it moved from "patent applied for" status to "patent issued" status (assumed, but patent number not found), then again as ownership changed, as the manufacturing location changed, and finally as new patterns (figure 8) were made to replace the original ones melted in a fire at the Lyons Foundry in Greene, NY.

The Bedell Years

The Zenith Egg Scale was originally designed with pot metal for both the base and the T-shaped upright (Bedell later changed to cast iron for the base and formed aluminum for the T-shaped upright). The scale head was graduated in 1-ounce increments from 18 to 30 ounces per dozen. As a group, these 'early' scales were all gray colored (unpainted), except for the bright red guitar-shaped counterweight and pointer, and they all sported paper labels. Before his patent was issued, the paper label included the words "Pat. Applied For"

(Figure 2). After the patent was issued, "Pat. Applied For" was dropped, of course (Figure 3). Since those early labels were made of paper, only a few have survived the passage of time. Usually, when we find one of these gray-colored 'early-production' models, there are no longer any remnants of the original paper label.

The first Zenith Egg Scale was rounded at both ends and was completely flat on the bottom, lacking any legs (Figure 9). This first pre-patent egg scale also lacked the raised bar on the top of the base to the right of center. Another pre-patent model (Figure 10) soon appeared, still without the raised bar on the top of the base to the right of center, but with legs and the ability to level the scale by turning a small bolt through a tapped hole at the left end of the base. This model also had a tapped hole (see arrow) directly under the counterweight into which a small bolt could be screwed to serve as a stop when using the Zenith as an egg grader.

By this time, Bedell had achieved the design he wanted. He added a solid "bar" on top of the base, to the right of center, repositioned the stop bolt (curved arrow on Figure 11) and attached a rubber bumper to it to cushion the blow of the counterweight, and he was ready to start production of the Zenith Egg Grading Scale with a gray-colored pot metal base with a paper label glued to the left top of the base (Figure 11). He probably produced the Zenith egg scale that way until at least 1942.

In the summer of 1942, poultry farming was added to the U.S. list of enterprises most essential to the war effort. That should have made it easier for Bedell to get enough material to make the bases, as well as the counterweights, out of cast iron, instead of pot metal, even during WWII. It is fair to assume that he started making the bases out of cast iron as early as 1942. One thing is certain: the patterns he used to make the cast iron bases had his label cast right into the base, on a slightly raised square on the top left surface of the base, beneath the guitar-shaped part of the weight. Bedell also used that occasion to add some color to his scale by painting the base, first a dark blue and later a light blue. The scale with the dark blue base still had the T-shaped upright and scale made of pot metal (Figure 12), and is thought to have been made that way until aluminum became more readily available after WWII. The scale with the light blue base had the T-shaped upright and scale made of the formed aluminum (Figure 13). All the blue- and red-colored Zenith Egg Grading Scales produced until Bedell sold the business in 1948 bore the "O.W. Bedell" label (Figure 4 above).

The Grange-Agway Years

When the Grange League Federation (G.L.F.) in Earlville bought

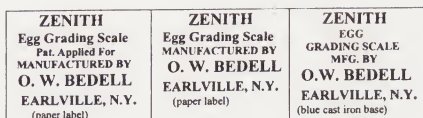


Figure 2

Figure 3

Figure 4

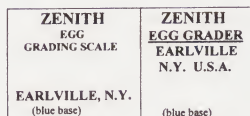


Figure 5

Figure 6

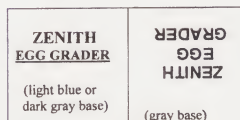


Figure 7

Figure 8

Figure 1. ♣ ♣ Zenith Egg Scale Labels.



Figure 9. ♣ ♣ Zenith Prototype. Note the rounded ends and the lack of legs or leveling bolt.

production rights for the Zenith in 1948, they simply ground the words “MFG BY O.W. BEDELL” off the master patterns which were used to make the sand molds in which the cast iron bases were poured at the foundry, leaving an empty space in the middle of the label (Figure 5). That enabled them to immediately begin manufacturing the Zenith while they waited for new master patterns to be made. When the new master patterns were ready, they sported a new label, which read “ZENITH EGG GRADER, EARLVILLE, N.Y., U.S.A.” (Figure 6). As noted earlier, the Grange changed the wording slightly, calling this an egg grader, not an egg grading scale, and adding “U.S.A.” All Zenith Egg Scales sold by the Grange from its outlet in Earlville from 1948 until about 1964 carried either the modified Bedell label or the “U.S.A.” label.



Figure 10. Zenith gets legs. Egg test wt used to show scale with load.

According to his widow, Sara, Norval L. (Bud) Pratt started working for the Grange farm store in Earlville, making Zenith Egg Scales, in the early 1950s. The Pratts lived in the New Woodstock area, about 22 miles from Earlville. In 1964, the Grange merged with two other farmers' cooperatives to form Agway. Agway established a new farm store in Cortland, NY, and moved everything there from the old Grange store in Earlville. Pratt accepted a job as the Specialty Manager for Agway in Cortland and continued making Zenith Egg Scales. Agway removed “EARLVILLE, N.Y., U.S.A.” from the master patterns, thus creating “ZENITH EGG GRADER (Figure 7) as the new Agway label, and changed the range of the scale to weigh from 16 to 32 ounces per dozen (Bedell's standard of 18 to 30 ounces per dozen had prevailed to that point), but retained the established colors of light blue for the base and bright red for the counterweight. According to Tim Coon, who currently manufactures the Zenith in DeRuyter, Pratt told him that the Grange and Agway were selling 2,000 to 3,000 Zenith Egg Scales annually during their peak years. Demand for the Zenith and other manual egg scales declined in the late 1960s, however, and, in the early 1970s, when sales dropped off enough, Agway shut down its egg scale operation in Cortland and offered the equipment to Pratt.

Figure 11. Zenith ready for production.



The Pratt Years

Pratt set up the equipment in his garage in New Woodstock and continued making the Zenith Egg Grader. He kept the Agway label, Zenith Egg Grader, but chose a dark gray paint for the base (Figure 14). A couple years later, the Pratts bought a farm up north, in the town of New Bremen, near Lowville. When they moved there in 1974, they took the egg scale business with them. According to Sara, the Zenith Egg Graders they made in Lowville helped them make it through the first few years on the farm, until it started to prosper. In 1979, Bud and Sara Pratt sold the farm to Clint and Nancy Walzman and returned to the New Woodstock area, taking the egg scale business with them. Bud continued making Zenith Egg Graders in his basement in New Woodstock until he sold the business to Timothy W. Coon.



Figure 12. // Zenith with dark blue base.



Figure 13. // Zenith with light blue base.



Figure 14. // Pratt Zenith with gray base.

in nearby DeRuyter, NY, in 1987.

According to Tim Coon, the Lyons Foundry in Greene, NY, made the cast iron bases and beams (counterweights) for the Zenith Egg Scales for Pratt, Agway and the Grange - presumably also for Bedell - until the early 1980s, when the Zenith master patterns were melted in a fire at the foundry. Pratt had new master patterns made and a foundry in Auburn, NY, has been making the bases and beams ever since. He had the label "ZENITH EGG GRADER", in large letters with each word on a separate line (Figure 8), centered under the counterweight [or poise]. He apparently failed to specify that the label should read from the front of the scale, however, because it reads from the back, so appears to be upside down.

The Coon Years

As noted earlier, Sara Pratt told me her husband had sold the Zenith Egg Scale business to Tim Coon, just down the road in the town of DeRuyter, in 1987. When I arrived at Tim's brother's farm and learned that Tim was there at the time, I drove down to the building where they were getting ready to work on the combine in preparation for harvest. In spite of the fact that I was obviously interrupting his work plans, he was curious about that Zenith Egg Scale I had in my hand. When he found out why I was there and saw the box full of Zeniths made by Pratt and Bedell which I had with me, Tim was kind enough take me over to his farm, where he gave me a tour of his egg scale production line, complete with heavy presses, multi-head drills, grinders and a metal turning lathe, with which he still produces 200 to 300 egg scales per year. When asked who was still buying manual egg scales in the new millennium, Tim told me that some states have such great respect for the accuracy and precision of the Zenith Egg Scale that they require their poultry farms to have at least one Zenith on the premises at all times for use in calibrating their modern, automated egg grading equipment.

Tim also showed me a set of master patterns - four steel patterns fastened to a steel base (Figure 15) - which are pressed into special molding sand to create the sand molds into which the molten cast iron is poured at a foundry to create the bases and beams (counter-weights). He uses the same master pattern as Pratt was using when he sold the business to Tim. Tim refers to this as the "new mold [pattern]" because it's the one that was made after the foundry fire in Greene destroyed the old pattern. Since Tim has not made any changes in the labels of the master patterns since he acquired them from Pratt, unless one looks newer than the other, it is impossible to tell which "upside down" labeled Zenith was made by Pratt (Figure 16) and which by Coon (Figure 17).

Like Pratt and presumably Bedell before him, Tim Coon drills holes in the base and beam for each scale, using special jigs to line everything up correctly. He has three heavy presses with which he cuts the raw material to the correct size; punches, drills and taps holes; shapes each component as appropriate; and punches the numbers into the face of the scale. He

uses a metal lathe to turn the brass pointers, and uses a foot press to form the aluminum upright, shape the pointer and fasten certain pieces together with rivets. After painting the bases gray and the beams red, Tim then begins assembling all the pieces into the finished product.

According to Tim, when Pratt was making 2,000 to 3,000 egg scales per year for the Grange and Agway, he was buying rubber caps from Goodyear for the adjustment screws in the base of the scales. When demand for the Zenith dropped to 200-300 per year, however, he had trouble getting those rubber caps from Goodyear in such small lots, at least at a reasonable cost, so it became impractical to use them any more. As a result, Pratt began using regular stove bolts instead, a practice which Tim has continued to date, except that Tim glues a piece of clear, soft rubber to the top of the bolts where the counterweight and the egg cup mechanism hit.



Figure 15. // Zenith Master Patterns.

As we finished up our visit, Tim gave me one of Pratt's instruction sheets with his New Woodstock address and one of Tim's instruction sheets with his DeRuyter address. Those complement the ones I already have of Pratt's with his Lowville address and Bedell's with his Earlville address, so I now have a complete set. I then drove Tim back to his brother's farm, where we parted company. It had been quite a day for both of us. I felt good about tracking down all those leads and finally finishing my investigation. Tim felt just as good about the new knowledge he had acquired about the earlier history of the Zenith Egg Scale he is still making today.

Pratt Experimentation

The Zenith Egg Grader shown here (Figure 18) is most likely an experiment on Pratt's part. The needle points down, so the markings for 18, 21 and 24 ounces per dozen are at the bottom. Two stops at the top could be used to set the grader to minimum and maximum settings. Although this egg grader has no manufacturer's markings on it, the tell-tale red, guitar-shaped counterweight, red pointer and distinctive egg cup mechanism clearly demonstrate Zenith physical characteristics. The "1002" on the back and the "3F" on the front of the counterweight are reminiscent of Zenith part numbers first used by the Grange with the "USA" Zenith pattern (Figure 6). Such part numbers never appeared on Zeniths manufactured by O.W. Bedell, and Tim Coon, the current manufacturer, didn't know anything about this grader. That leaves Bud Pratt, who personally manufactured the Zenith from 1948 to 1987, first for the Grange (1948-1964), then for Agway (1964 to early 1970s), and finally for himself in Woodstock (early 1970s to 1974), in Lowville (1974-1979), and in Woodstock again (1970-1987), as the most likely inventor of this one-of-a-kind egg grader.

Distinguishing Characteristics

So, with all these different models and changes in the labels used on Zeniths manufactured by Bedell, the Grange, Agway, Pratt and Coon, how do we tell the difference? The key is the labeling, or lack thereof:

1. Light gray, unpainted pot metal base with no label; made by Bedell, probably in the 1930s, paper label disappeared over time.
2. Paper label glued to pot metal base: Bedell.
3. Dark blue cast iron base with Bedell's name on it. The first painted base made by Bedell. Quite Rare. He presumably did not like the color on that batch, so changed to light blue, perhaps at the end of WWII.
4. Light blue cast iron base with Bedell's name on it; made by Bedell, probably from 1945 to 1948.
5. Light blue cast iron base with a blank space in the middle of the label where Bedell's name used to be: made by the Grange in Earlville between 1948 and the very early



Figure 16. // Zenith Upside Down Label by Pratt.

1950s.

6. Light blue cast iron base labeled "Zenith Egg Grader, Earlville, N.Y., U.S.A.," made in Earlville by the Grange, 1948-1964.
7. Light blue cast iron base labeled "Zenith Egg Grader;" made in Cortland by Agway, 1964-1970.
8. Dark gray cast iron base labeled "Zenith Egg Grader;" made by Pratt in New Woodstock, 1970-1974; in Lowville, 1974-1979; or in New Woodstock, 1979-early 1980s.
9. "Zenith Egg Grader" label reads upside down when viewed from the front: made by Pratt in New Woodstock from early 1980s to 1987; by Coon in DeRuyter from 1987 to the present.

Acknowledgements

Special thanks to Gordon Dresser, a truly generous tour guide, who showed me around Earlville, shared his knowledge of O.W. Bedell and the Zenith Egg Grading Scale with me, and introduced me to other people who also know Bedell personally. My appreciation also to Richard Eades, President of Earlville's Quincey-Square Museum Association, who provided so much well-documented information on Bedell throughout his life. My thanks to a special lady, Bud Pratt's wife Sara, for helping me sort out the sequence of events in the 75-year history of the Zenith Egg Grading Scale. Finally, my sincere appreciation to Tim Coon for giving so generously of his time and attention at a very busy time of the year on any farm and showing me all the original equipment which he still uses to make the Zenith Egg Grader in the new millennium.

Notes

1. Labels on various Zenith Egg Scales and Zenith Egg Graders
2. Grange League Federation Patrons Purchasing Guide (catalog), Spring 1953, published by the Cooperative G.L.F. Exchange, Inc., Ithaca, N.Y.
3. Northeastern Supply Co., Inc., Ipswich, Massachusetts, mail order catalog for 1954
4. Original Zenith Egg Grader box with picture of a Zenith Egg Grader on the side and "manufactured by Cooperative G.L.F. Exchange, Inc. Farm Supplies Department, Ithaca, N.Y." under the picture.
5. Original Zenith Egg Grader box with adjustment instructions indicating the Zenith Egg Grader was manufactured by N.L. Pratt, R.D. #3, Lowville, N.Y.
6. Anecdotal information from Bedell's neighbors in Earlville: Gordon Dresser, Richard Eades, Charlie Crandall and Harry Conley
7. Burgess Tedesco Funeral Home Records, Hamilton, NY
8. Chenango County Surrogate Court Records, Norwich, NY
9. Mid York Weekly September 21, 1961; July 22, 1965; & February 5, 1976
10. West Hill Cemetery, Sherburne, NY
11. Land records at Lewis and Chenango County Clerks' offices, NY
12. Sara Pratt, widow of Norval L. (Bud) Pratt, who manufactured the Zenith Egg Scale/Grader for at least 35 years
13. Timothy W. Coon, who currently makes the Zenith Egg Grader.

About the Author

Charley Amsbaugh, one of our newer ISASC members, has been collecting American egg scales for just over 3 years. Born on a farm in western North Dakota near the end of World War II, Charley recently remarked that none of the earlier generations of his family ever owned an egg scale - they didn't care what the eggs weighed, as long as they were fresh when they hit the frying pan! An information research analyst by trade, Charley has tackled the information surrounding American egg scales with great intensity, buying old poultry equipment catalogs on eBay and searching the length and breadth of the information highway (Internet). Charley met and married Dawn Crysler while at Syracuse University in 1970. During their annual visit to Central New York in September 2004, Charley visited Earlville, the home of the Zenith Egg Scale, where he gathered background material for this article. More information on the Zenith surfaced later, so Charley returned to Central New York in July 2005 to complete his research and get "the rest of the story."

Figure 17. 2005 Model by Coon.



Figure 18. Experimental Design Zenith.



Showcase

The workmanship on this Troemner Mint scale is superb. These scales were used in the late 19th century at the US Mint to test the weights of gold and silver planchets. Planchets are unstamped coin blanks.

The dimensions of the scale are as follows: The overall height, 17 $\frac{1}{2}$ inches, the base measures 11 $\frac{13}{16}$ inches by 5 inches and is 1 $\frac{15}{16}$ inches high resting on four adjustable brass feet. The Center support top is 14 inches above the base, the beam is 10 inches long, and the pointer is 4 inches long ending with a horizontal crescent. The pans are 1 $\frac{1}{2}$ inches diameter by $\frac{7}{16}$ inches high.

The base and center support are cast iron. The vertical rod that raises the beam is machined steel. The beam, stirrups, and devices at the end of the beam support are brass. The pan hangers and pans are brass. The pans have a hard steel overlay to prevent wear. The horizontal bracket, just under the beam, is brass and has Troemner's name hand engraved on it. The left hand button raises the beam, and arrests the pans. The right hand button raises the beam and lowers the arrests under the pans.

The weight box is 4 inches wide by 2 $\frac{1}{4}$ inches deep by 1 $\frac{1}{16}$ inches high. Horizontally, between the two rows of weights, the wood is embossed, "Least Current Weights". The weights are for gold coins in \$1, \$2 $\frac{1}{2}$, \$3, \$10, and \$20 denominations.

Ken Goodhue Collection





A Balanced View

Thank You Tom!

You may recall that six years ago, after 25 years of exemplary stewardship by co-founder and President Emeritus Bob Stein, ISASC was faced with the task of recruiting a new President to guide ISASC into its second quarter century.

The Society was fortunate in convincing Tom Dooley to become its President. Tom, a long time member of ISASC, had recently retired from the State of California where he served as the Chief Fiscal Advisor to both Houses of the Legislature. In retirement Tom joined his wife Gloria a well known Sacramento antiques dealer. Tom specialized in European scales, weights and scientific instruments. Many of us over the years have acquired some special scales from Tom.

Tom has just completed two three year terms as President of ISASC and has done an outstanding job of piloting the affairs of the Society. Drawing on his background in California government, and bolstered by the desire for many members to help out in the organization, Tom led a well rounded group of directors to create new innovative programs.

Under his leadership the Endowment Committee and the Web Site were established. The implementation of the annual convention was delegated to local convention committees. Over the past six years these committees have developed procedures and templates for running the convention which have become a valuable tool for those hosting future conventions. A great deal of current ISASC leadership has been found in these committees.

Under his leadership, we have continued to strengthen and enhance our relationship with the European chapter.

He leaves his presidency with the Society being in a very strong position. Tom has done an outstanding job and deserves the thanks of the ISASC membership. We look forward to seeing Tom and Gloria at the convention in May in San Francisco where we can thank them once again for their dedication and service to ISASC.

@@@ Good Job Tom @@@

Election of Officers to the Board of Directors

Included in the mailing of your EQM last October were two ballots, one for the three seats on the Board of Directors and President and the second for the amendment of the bylaws relating to the terms of office of the board members and President. The ballots are in and the results are now known. The amendment to the bylaws was passed. Jerry Katz was reelected and has agreed to continue as Chair of Research, Carol Hayden was elected Secretary and Peter Laycock was elected President. Consistent with the changes to the bylaws their term will be for two and one half years to May 31, 2008.

Endowment Committee Plan and Progress Report

Mary Anne Murphy, Chair of the Endowment Committee reports on activities and plans.

Stage One: Storage & Display

Arrange secure climate controlled storage for the initial contributions of scales to the ISASC collection. De-acquisition duplicates and damaged items. Arrange for display of the collection such that members can view it.

With the recent move into a larger unit within the Pittsburgh storage facility, this stage is now complete. With the Everett and Landers collections, we now have a respectable collection of about 400 scales plus weights. We also have display/storage space to add a significant number of additional scales by altering the shelving configurations.

Members who wish to view the collection may contact Mary Anne Murphy to make arrangements to do so.

Phone: 412-321-5947 Email: MAMURPH721@aol.com.

Steve Beare is also in the process of putting the collection on the ISASC website.

Stage Two: Increase the size of the collection. Increase the funds to support the collection.

In considering where to go from here, it is clear that while we have an initial collection we are proud of, it is nowhere near large enough or significant enough or complete enough to move to public display as the ISASC Collection. Thus, we now find ourselves in Stage Two, soliciting further donations/pledges of scales and/or collections of scales, as well as further funds. We anticipate that this stage will last for the next few years.

Stage Three: Planning for Public Display.

Once the ISASC collection is of a size and quality which warrants a designation of outstanding, the next step will be to make plans for public display. This will include determining optimal square footage required and costs involved. At that stage, it will be necessary to engage in significant fundraising, probably much of it beyond ISASC members themselves. Possible sources might include scale companies, companies for whom weighing is integral to what they do, as well as possible government and foundation grants.

Stage Four: Arranging for Public Display.

Once ISASC has both an outstanding scale collection and the financial resources/pledges to mount and sustain a permanent public exhibition, arrangements will need to be made to physically locate the collection. This may include partnering with an existing museum or a stand-alone venture, depending on what options are available at the time. The top priority for choosing a site would be that the collection would be on permanent display, and not subject to being stored in a back room or sold, i.e. that ISASC would retain control over the collection.

Other Initiatives:

We are aware that a number of our members have their scales on display, some in public spaces and some in privately owned spaces. Steve Beare is in the process of compiling a listing of such displays for our website, along

with contact information, which would provide a linkage between the ISASC collection and other collections for those who want to “see scales.”

The Endowment Committee welcomes your input. Please feel free to write, call or email.

Good News!!! Mary Anne reports that Bill and Libby Everett are moving back to Pittsburg. Both are well and are looking forward to the move. We wish them well in their new home in a warm, familiar and friendly community.

EQM in Living Color

EQM has always been a very important part of ISASC. For over twenty five years it has been carefully and meticulously developed to become the foremost journal on scales and weights. To further enhance EQM, starting with the first issue in 2006 it will be published in color. The membership owes a vote of thanks to Steve Beare and Jan Berning for their efforts and hard work in taking EQM to its new colorful format.

The life blood of any good journal is the articles that it publishes. Almost all of the articles in EQM have been authored by ISASC and ISASC Europe members. In order for EQM to continue there is a constant and continuing need for articles. EQM Editor Jan Berning and Assistant Editor Cliff Lushbough have requested that I encourage the membership to write and submit articles. All of us have unique and interesting scales and scale experiences that could be shared through EQM. Jan and Cliff will be happy to help with the editing but they need your input. Please make a special effort to support EQM with an article.

Book --- Weights and Measures of Scotland

You will recall that ISASC was the first to pledge financial support for the publication of *Weights and Measures of Scotland; A European Perspective*, by R. D. Connor, A. D. C. Simpson and A. Morrison-Low. The authors are please to advise that their book was awarded the Saltire Prize (equivalent to the Booker Prize) as the Research Book of the year. Allen Simpson one of the authors has written ISASC to express their gratitude for our support. Nice going guys!!

Welcome To New Members

I would to take this opportunity to welcome the following new members and to encourage them contact any of the members of ISASC should they have any questions. Hopefully we will get a chance to meet them personally at the annual convention or regional get-togethers.

George Bean, Concord, NH, (Jane)
Pete Dayotas, Shrewsbury, MA
Dave Farnham, Williamstown, VT, (Debby)
Stuart Haas, Glendale, AZ, (Sherry)
James Stafursky, Thornton, NH
Larry Violette, Rehoboth, MA

The Penny Scale

A husband stepped on one of those penny scales that tell you your fortune and weight and dropped in a coin.

"Listen to this," he said to his wife, showing her a small, white card. "It Says I'm energetic, bright, resourceful and a great person."

"Yeah," his wife nodded, "and it has your weight wrong, too."

“OUCH!!”

San Francisco Here We Come!

Ralph Bergmann Chairman of the San Francisco Convention Planning Committee reports that plans are moving ahead nicely and that he and his committee promise another outstanding convention.

During the convention you will have an opportunity to view some of the world's outstanding collections. Plans are in place to see the collections of

Bill Doniger, Clem Monday and Ken Goodhue, definitely a not to be missed experience.

As well you will enjoy a tour of the Wormser Collection at the University of California's School of Pharmacy.

Most of the familiar convention activities; guest speakers, presentations, show and tell, silent auction, lets make a deal will be back. The Thursday night dinner, Friday evening album sharing, the Saturday banquet and the Sunday annual general meeting are all scheduled. A post convention tour to see the Monday and Goodhue collections is also planned for the Monday after the convention.

The Convention Committee will be sending out the registration packets shortly. Make sure that you book early. We look forward to meeting with old and new friends in San Francisco May 4 to May 8.

Martin Vogel 1935-2005

ISASC member Martin (Marty) Vogel was born in Bronx, NY in 1935. Marty a retired engineer leaves his wife Flo and 3 daughters and 5 grandchildren. He had a vast collecting interest besides scales, to name just a few: globes, playing cards, bridge markers; juice reamers. An ISASC member for many years, he attended the Pittsburgh and DC conventions.

Off to Work

Thank you for your vote of confidence. I look forward to serving as your President and will endeavor fulfill the responsibilities of the office with the same vigor as have my predecessors. I am privileged to be joined by a strong and dedicated board of directors who do an outstanding job on behalf of ISASC.

A handwritten signature in cursive script, reading "Peter Laycock".

Peter Laycock, President
ISASC



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Cover Picture

Patent number 329,655 was issued to J Franklin Lawrence and assigned to John Lawrence of Philadelphia, Pennsylvania on November 3, 1885 for a Combination Scale, Weight Tray, and Twine-Box. The twine-box in the base has a hinged opening in front in order to insert the ball of twine which was used for tying packages before the advent of paper bags. The twine may be fed through any one of the holes in the box. The weight tray rotates atop the twine box to enable the shop keeper easy access to the various sizes of weights. The attached cast label reads: IXL Southwark Scale Co. Phila, PA Patented Nov 3, 1885. The scale measures 12⁷/₁₆" long and 7¹/₄" without the pan. It has most of its original paint.

Phil Wehman Collection

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Candlesticks, Part 2

BY BRIAN BRASS

Editor's Note: In order to accommodate an extra, unexpected article in the last issue, this article was divided into two parts, with the kind permission of Brian. This had the unfortunate effect of splitting comment on some of the pictures from the relevant text, for which I apologize.

Samuel Turner

Samuel Turner Senior (consecutively at 11 Court, Hanley St; 64 Hanley St, and 71 Lionel St, Birmingham) made huge numbers of scales from 1858, the date he started his company. His candlesticks have the name SAMUEL TURNER BIRM^{INGHAM} round the collar. Three are known that were for sale in UK (Figure 30, page 3108), and three are known in ounces and cents, 3, 6, 9, 12, 15, 18, 21 and 24. These were made for the US market. There are no special features that would enable us to decide whether he made them in his own factory, or had them made by one of the other Birmingham makers.

When Turner marked his roberval scales, he used his trade mark of a circle containing a large T with two smaller Ss with snakes' heads. But this trade mark has not been seen on the six candlesticks known.



Figure 34. // Two candlesticks by S. Turner, Birmingham, both made for the American market.

William Blews & Sons

William Blews & Sons operated from 9-15 Bartholomew Street, Birmingham from 1835 to 1882. They were brass founders, boiler-makers, and made (real) brass candlesticks, ships' lamps, chandeliers, and gas-fittings. They may also have been involved in the retailing of scales as a result of their manufacture of standard weights, but there is no real evidence (except as noted in this article) that they were involved in the manufacture of candlestick scales.

Figure 24a shows three candlesticks, two on the right made by Winfield and the other ostensibly made by W Blews. But looking at figure 24c, the method of manufacture shows that the candlesticks were made by the same maker. As Winfield held the design registration, it seems logical to state that Winfield was the maker, and Blews the retailer.



Figure 35. Anonymous candlestick. Another little pressed brass candlestick.

Levi & Salaman

Levi & Salaman, (working as silversmiths and electroplaters approximately 1876-1931) of 143, Newhall St, Birmingham, took out a design registration, N° 308820 in 1897 for their silver bow front. They had a second design registration, no. 449960, of 1905, for a candlestick that had four lobes round the base, and had an inner brass sleeve attached to the spring, that probably allowed adjustment for taring. Figure 23. Examples are known that were assayed in 1904 and in 1910. As prolific makers of domestic and personal silverware, (and makers of silver bow-front postal scales,) the candlestick fitted neatly into their range of products.

Setton and Durward / A Barker

Arthur Barker of 155 Devonshire St, Lodge Road, Birmingham took out design registration N° 733389 on 14th November 1928 for the most primitive, cheap candlestick scale of tinplate, with a brass letter plate, (Figure 21). As the scale was sometimes stamped CRITERION, the trademark of Setton and Durward, was Barker possibly an employee? The friction in these short stubby candlesticks makes them unreliable.



Figure 36. The anonymous maker (probably Winfield) has covered the leaf decoration on the silk brocade with a dark green paint enamel. The paint does not adhere well to the gilt finish, and has broken away. Postal rates 1840-65.

Henley

Henley either made (or had made for him) a tin kitchen scale made in three parts, all of them crude and simple, (Figure 8). A possible retailer, and the only one found, is the Henley Ice Cream Co., from Henley in Arden, near Stratford on Avon, making ice cream since 1930. The plate is stamped R¹³ 778292, taken out on 17th November 1932 by Hanbury Dunnnett of the Vanguard Works, King's Road, Tyseley, Birmingham. Dunnnett inherited his factory from his father Rivers Dunnnett, an Ironmonger & Manufacturer, but today the company specialises in

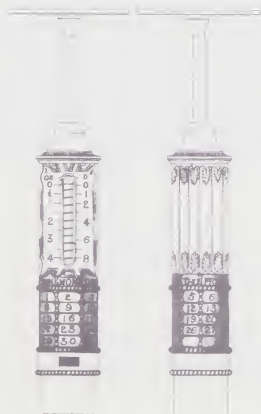


Figure 37. Charles Wise took out a design registration in 1863 for his candlestick with a perpetual calendar. The idea is feasible, but none has been seen.

Figure 38. This small gilt candlestick is not named. The collar is stamped WARRANTED CORRECT. Postal rates 1840-1865.



Figure 39a. // Three variations of the pressed brass anonymous candle-stick. The flimsy construction is barely noticed by collectors who enjoy the very Victorian flavour of the decoration. The cornucopias round the base are interspersed with three cartouches, the agricultural one representing trade with the world (including a box of tea and a bale of wool). Another represents travel over the oceans by a paddle steamer with additional sails. The third one represents travel by locomotive (albeit, an early engine).

The right-hand scale was made for the USA, being in cents and ounces. It has black paint over the silk brocade, but, as usual, it has chipped off. The raised neck of the base shows hints of a brown stripe with gilding.

The middle scale is taller than the other two, having a graduated scale up to 16oz. It is all bright lacquer.

The black patinated scale (extreme left) has gilt stripes, with graduated postal rates up to 8oz.

By comparing the various pressings of the base, it is clear that at least three dies were made for pressing this one base, suggesting that a great many were made.



timber work. The top part of the scale consists of a sealed cylinder with a load plate fixed on with tabs. The bottom is an open cylinder with a base similarly fixed with more tabs. The spring is loose inside the bottom cylinder.

R Hodges

Rowland Hodges of 12 Frederick St, Birmingham, took out a design registration N^o. 251400 on 15th March 1895 for his shapely letter plate. The number is stamped in minute lettering under the letter plate. Only one example is known of this little scale 4 1/2 inches high. (Figure 22a & 22b). The tube is stamped with a design of a cherub sitting below swirling vines.

Charles Wise

Charles Wise, of 30 King Edward St, Birmingham, took out a design registration N^o 5028 (Figure 37) in 1863 for a candlestick with a calendar around the cylinder. As far as I am aware, no scale of this design has ever been recorded.

Unknown makers

Many British candlesticks do not bear a maker's name. Two

Figure 39b. // Close-up of one of the cartouches above.



candlesticks show identical pinned-on graduated plates, soldered seams and stripes of alternate bright brass and black-patinated brass round the tube. Three others are known with an identical floral decoration on the cap of the tube.

Another group, all obviously made by one anonymous maker, have cartouches pressed into the base, representing agricultural trade, steam locomotion and sea travel, (Figures 39a & 39b). The three exemplify the variation that was so typical of these makers, black patina with gilt stripes, bright lacquer with gilt stripes, or silk brocade painted. The one on the right was made for the American market, and was advertised in Fairbanks' catalogue in 1859.



Figure 40. J & E Ratcliff candlestick made for the French market. Compare it with Figure 26. The base is different, but the graduated plate is the same.

Figure 41. Few examples of early Winfield designs have survived. This geometric letter plate is on a candlestick with the collar giving the design registration number 170 and January 13th 1840.

Numerous other candlesticks exist that are as attractive as any named ones. Why did the maker not put on his name? Figure 38 merely has "Warranted Correct" where one would expect to see the name. Figure 35 has no clues as to its manufacturer. Figure 43a is unusually tall, being 10 inches (250mm) high, to accommodate a long spring which takes the load of a 16oz package.

Foreign manufacturers

In the United States of America, the main producer of candlestick scales was Chatillon of New York. George H Chatillon took out patent N^o 196434 of 23rd October 1877, for a household tension spring candlestick with a tare

Figure 42. Another of Winfield's very early designs. The collar has the Registration number and the date, January 13th 1840. Note the high quality of the casting.

adjustment, Figure 44a & 44b. They illustrate their *Combination Letter Balance and Paper Weight* in their catalogue of 1894, made of spelter, nickelled or bronzed, and with a rosewood base, Figure 47. They were sold wholesale at \$12.00 per dozen.

Fairbanks sold the English candlestick with three cartouches round the base illustrating aspects of the Industrial Revolution (Figure 39a), with postal rates in cents, as illustrated in their catalogue of 1859. This American evidence enables the British to date their cartouched candlesticks, that had been totally undateable before the Fairbanks evidence was found.

Mahlon S Drake took out patent N° 197618 on November 27th 1877 for a household tension spring candlestick with a moveable graduated plate to tare a bowl, but assigned it to Henry Dean of New York. Mahlon was listed in the census of 1860 as a seaman (so must have served as a sailor in the Civil War) and in censuses between 1870 and 1910 as a manufacturing machinist, latterly with his own shop. If that was all we knew, we would deduce that he made the candlestick that he patented. But he assigned his patent candle-

stick to Henry Dean, and for one year; 1878, Henry C Deane was listed as 'scales' in the New York and Brooklyn Directories. Does this mean he made the scales, or was he the retailer? He lived next door to the Becker brothers, so perhaps there was some trade connection. Intriguing!

L E Brown of Cincinnati patented his household candlestick N° 210493 on December 3rd 1878 with a compression spring, and sold brass and pewter versions in large numbers (Figure 8). The instructions are printed onto a

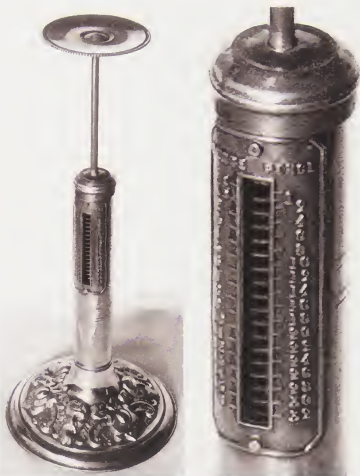


Figure 43a & 43b. A large anonymous candlestick for compact parcels. The rates go up to 16 oz for 32d. (1840-1865)



Figure 44a. In 1877 Chatillon, USA, patented a handsome iron household scale with a graduated plate that could slide up or down, to tare a bowl. The capacity was 12lbs.

Figure 44b. To prevent the rod from binding, Chatillon used two concave rollers fitted into the bottom, using the same principle as Winfield. Winfield, however, used three rollers equally spaced round the rod.



Figure 45. // This delicate little candlestick with a tension spring was made of spelter, and sold in the USA. Only one example has been seen.

dise of wood inserted underneath the base. The rough wood makes it extremely difficult to read!

An anonymous silver candlestick is stamped Sterling, 458, E (Figure 48), and a logo of a stirrup with a gothic S, and is only 5 inches (125mm) tall. It is particularly rare, being made with a tension spring mechanism.

Most recently, Thompson Engineering & Mfg Co. of Chicago made the Scale Queen which they patented in 1949. It was distinctive in its material and style, being aluminium turned down to fins around the conical tube, (Figure 49). The reason for the tube being conical cannot be explained, unless somebody would care to dismantle one! See EQM pages 2340-2343 for the late George Anna Wehman's article on the variations on the Scale Queen design.

In France, M V Susse (patent agent) patented No. 7700 of 13th November 1848. This patent covered eight entirely different scales on five different principles. Of these, two are compression springs, one is a tension spring, and one has a cord and poise, all shown in EQM on page 1373. None of these are known to have been produced. Narcissé Briais of rue de Calais, Belleville, patented a candle-



Figure 46. // Chatillon candlestick, unnamed. The candlestick is justifiably called a paper weight, as the base is exceptionally heavy.

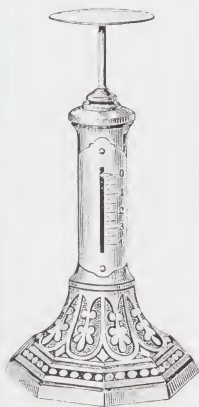


Figure 47. // Although available nickelled or bronzed, I have also seen examples in plain grey spelter. I did not find a patent for this scale in EQM. Chatillon catalogue of 1894.



Figure 48. // Anonymous American silver candlestick, with a tension spring. Weighs only up to 4oz. The lead weight was put on to extend the spring showing in the top of the tube.



stick on 28th October 1856, N° 28419. See the patent drawing on EQM page 1375. The conical spring was encased in a handsome ebony case with gold lettering. The gilt letter plate was fretted out in a scroll design, (Figure 50).

In Germany, Emil Ubrig took out a British patent N° 1478 of 19th January 1897 for a parcel tension-spring candlestick with a linkage connecting a rod to a rotating pointer. It had the admirable effect of giving the pointer a much larger arc than normal over which to travel. The arc, being enamelled white, gave a much clearer read-out than on other candlesticks. The version for the UK market was graduated in pounds, up to 11 lb for 1 shilling. The cast tube bears the logo UWf (Ubrig Waagen-fabrik.) The patent drawing is shown in EQM, page 622, with a photograph on page 623, (Figure 51).

This brief historical outline illustrates another example of the rich inheritance left to us by the Victorians. One can only admire the vitality, the variety, the entrepreneurial spirit, the engineering competence, the courage to make and export to foreign markets, and above all, their delight in the production of goods of lasting quality and beauty. It is a legacy of which we should be justly proud.



Figure 50. // Briais made this ebony candlestick from 1848 on. Postal rates 7½ grams for 20 cents, 15 grams for 40 cents, and 80 cents for heavier letters.

He also made a squat version that is much fatter than this version.

No examples are known for the British market, although Briais exported numerous postal scales to the UK.

Acknowledgements

I am exceedingly grateful to Diana Crawforth-Hitchins, the previous Editor of EQM, for providing the historical background information on the various British manufacturers referred to in this article; to Steve Beare for the historical information about the American makers; and to my daughter, Clare Brass, for the drawing (figure 4). With thanks also to Dick Axelrood, the late Lou uit den Boogaard, Gerry Chellingworth, Andrew Crawforth, M. Henin, Bill Lindeyer, Michael Robinson, Janet and Noel Scarratt, Les Schneiderman, Bob Stein, and the late Brian Stimpson for their assistance.

Notes & References

Crawforth, M A., *Handbook of Old Weighing Instruments*, published by ISASC.

Green, H, Profile on R W Winfield, *Equilibrium*, pages 10-12.

I shall be pleased to receive photographs and any other information from collectors who have candlestick scales different from those described or illustrated here. Brian Brass.

Author's biography

Brian is a founder member of ISASC, its first treasurer, and an enthusiastic supporter of the organisation since its inception. He has specialised in candlestick scales and choice miniature scales of all descriptions. He is the author of several articles published in EQM and other collecting journals. He is a humorous speaker and has enlivened many ISASC meetings, both in the UK and the USA. He speaks on a wide variety of topics. His talk at Leicester in 2005 on *The Use of the Scale in Art* was enthusiastically received.

He is married to Janice, who ran a ballet school for 37 years. They have 6 grandchildren. Brian is a Chartered Accountant, and thus was at one time a regular visitor to the USA, where he had several clients.



Figure 49. // The Scale Queen came with advertisements along the base. There are dozens of names noted, and it is assumed that they were 'give-aways'.



Figure 51. // Ubrig's modified candlestick, with a cog and ratchet to turn the vertical movement into a rotatory movement. Made for the UK market (capacity 11 lbs. Therefore for parcels, and made after 1897.

An American Patented Apothecary Scale

BY STEVE BEARE

I wandered through an uninteresting antique/junk mall in Adamstown Pennsylvania one Sunday last year. I was killing time while my wife was looking at a nearby antique mall, and was surprised and delighted to find a most unusual "tea sampling scale" for sale (Figure 1). It was obviously an apothecary scale, but the dealer had proudly shown his business acumen and displayed a photocopy (Figure 2) of a similar-looking "tea sampling scale" from a well-known scale guide.

What interested me most about the apothecary scale was the presence of a stamped maker's mark on the rectangular support for the column, PAT. MAY 27 1873 CYRANI & REINHARDT (Figure 3). Although the names Cyrani and Reinhardt are clearly of European origin, the patent style of the date implies that this scale is of an American make.

I readily purchased the scale at the suggested "tea sampling scale" book price. When I got home, I quickly checked my database of 19th century scale makers, but was not able to locate either Cyrani or Reinhardt. I next checked the database of American scale patents. I was pleased to find that patent number 139,372 was issued on May 27, 1873 to Albert Cyrani and Charles Reinhardt of Brooklyn, NY for an Improvement in Druggists' Scales (Figure 4). The invention is the use of an elongated washer and a tightening nut on a screw attached to the column to hold the beam off the marble base while the druggist weighed out his drugs (Figures 5A and 5B).

The principle of operation is well described in one sentence of the patent:

Onr invention relates to scales in which the fulcrum of the beam and its connections are raised only during the use of the scales; and it consists in providing for the raising and lowering of the operating parts by means of a set-screw passing through a longitudinal slot in the hollow standard and entering the rod which supports the fulcrum upon its upper end, by which means the operating parts may be raised and held firmly in position for use by said set-screw, having both hands of the operator free to attend to the operation of weighing, in contradistinction to devices where the operating parts are raised and held in position for weighing by means of a lever, which must be held depressed by hand during the whole operation of weighing.

Conventional apothecary scales commonly use a lever to raise the beam (Figures 6A and 6B), leaving only one hand free, which must have been a major inconvenience. A less common approach to free up both hands was to use a vertical knob attached to a thick strip of angled metal or a cast piece of metal to raise a rod through the hollow column (Figures 7A and 7B). This may have needed frequent adjustment to



Figure 1. ▲▲ Cyrani & Reinhardt apothecary scale.



Figure 2. ▲▲ "Tea sampling scale."

operate freely. I have two examples of this type, and they do not always work smoothly. Another example is pictured in Figure 2.

Probably the best approach was to use a horizontal knob attached to a shaft with a cam that lifts the rod much like a modern camshaft (Figures 8A and 8B). This was more costly to manufacture, hence it was used mainly on more expensive apothecary scales and chemical balances.

Of course, one can marvel at the relative simplicity and obviousness of the Cyrani & Reinhardt invention and question how it was even awarded a patent, but my interest is more in finding out about these two unknown makers and where they came from. Both the underside of the wood base frame and the drawer are numbered 12 in pencil, implying that additional examples of this patented scale were manufactured (Figure 9).

From the online census records, I learned that Albert Cyrani is listed in the 1880 census for Jersey City, New Jersey (just across the Hudson River from Manhattan) at 259 Grand St., age 63, occupation Scale Maker, born in Bohemia, as was wife Ann, age 61.

Albert died before 1900, as his wife is listed as a widow in the 1900 census for Jersey City, New Jersey: Anna Cyrani, age 80, widow, born Aug. 1819 in Germany, emigrated in 1860, inmate of Raymond Roth Pioneer Home for Aged Germans.

While the 1873 patent says that both he and Reinhardt are from Brooklyn, Cyrani does not show up in any of the New York City or Brooklyn directories between 1860 and 1880. However, Albert is listed in the Jersey City, NJ directories starting in 1860 until his last entry in 1887. His widow Ann is listed in 1889, implying that he died during 1887 or 1888. Prior to settling in Jersey City, Albert appeared briefly as a goldsmith in the Albany, New York directories in 1858 and 1859.

Here are Albert Cyrani's complete city directory listings:

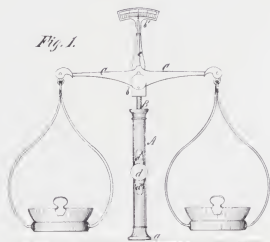
DATES	OCCUPATION	HOME ADDRESS	BUSINESS ADDRESS	CITY
1858 - 1859	Goldsmith	80 Beaver		Albany, New York
1860	Jeweler	52 Prospect		Jersey City, New Jersey
1861	Jeweler	22 Monmouth		Jersey City, New Jersey
1862 - 1863	Jeweler	South 8 th near Bergen		Jersey City, New Jersey
1865	Jeweler	34 Grand		Jersey City, New Jersey
1866 - 1867	Scale Maker	34 Grand		Jersey City, New Jersey
1868	Cutler, Cutlery	42 Prospect	85 Newark Ave	Jersey City, New Jersey
1869	Cutler, Cutlery	83 Newark Ave	85 Newark Ave	Jersey City, New Jersey
1870	Cutler, Cutlery	Prospect n. Newark	85 Newark Ave	Jersey City, New Jersey
1871	Cutler, Cutlery		94 Newark Ave	Jersey City, New Jersey
1876	Machinist	259 Grand		Jersey City, New Jersey
1880	Machinist	259 Grand		Jersey City, New Jersey
1881	Scale Maker	259 Grand		Jersey City, New Jersey
1883 - 1884	Scale Maker	259 Grand		Jersey City, New Jersey
1886 - 1887	Scale Maker	67 Bright		Jersey City, New Jersey
1889	Ann Cyrani Widow of Albert	82 Canal		Jersey City, New Jersey

Missing entries means that Cyrani did not appear in the directory for that year.



Figure 3. ▲▲ Cyrani & Reinhardt mark.

Fig. 1.



Witnesses:
Kathryn Kelly
Abraham Levy

Druggists:
Charles Cyran
Charles Reinhardt

Figure 4. Patent 139,372 issued May 27, 1873.



Figure 5A. Washer assembly-unassembled.

From the Jersey City directory search on microfilm, I learned that Cyrani was located there in 1860. This prompted me to go back and search more aggressively for him in the online census index, using a number of techniques, including spelling variations, family member names, country of origin, and first name only searches. Eventually, I found among the dozens of Alberts in the index for Jersey City in 1860 Albert Cegraine [sic], age 40. Jeweler, married to Anne, age 41, daughter Amelia, age 13, all born in Germany. The manuscript census shows the correct, but extremely difficult to read spelling, and illustrates how names are often either incorrectly entered or excluded from the online index.



Figure 6A. Apothecary scale with lever lift.



Figure 5B. Washer assembly-assembled.

The German birth of 13-year old Amelia coupled with the 1858 Albany directory entry suggests that the Cyrani family emigrated sometime between 1847 and 1858. The 1900 census report for Albert's widow Anna says she immigrated in 1860, but a single report is not always reliable. I have not yet been able to locate their immigration records.

Albert Cyrani was a goldsmith, jeweler, cutler, machinist, and a scale maker, consistent with the manufacture of this interesting apothecary scale.

What role did Reinhardt play?

Here are Charles Reinhardt's complete Brooklyn directory listings through 1880, and for three later years for which I was able to locate directories. He did not appear in the New York directories between 1860 and 1880.

DATES	OCCUPATION	ADDRESS	CITY
1866	Cutler	122 Wyckoff	Brooklyn, New York
1867	None Listed	15 Flushing Ave.	Brooklyn, New York
1868	Instrument Maker	44 Stagg	Brooklyn, New York
1869	Clerk	44 Stagg	Brooklyn, New York
1870	Machinist	44 Stagg	Brooklyn, New York
1871 - 1872	Surgical Instruments	72 Stagg	Brooklyn, New York
1873 - 1880*	Scale Maker, Scales, Scale Mfr.	72 Stagg	Brooklyn, New York
1888 - 1889	Scale Maker, Scales, Scale Mfr.	72 Stagg	Brooklyn, New York
1897**	Scale Maker, Scales, Scale Mfr.	72 Stagg	Brooklyn, New York

Key for Table 2. *An 1880 advertisement says:

Manufacturer of Diamond, Gold, Fine Druggist's, Counter, and Grocer's Scales & Weights.

**Also listed as Reinhardt & Co. scales.



Figure 6B. Apothecary scale with lever lift-detail.



Figure 7A. Apothecary scale with vertical knob.



Figure 7B. Apothecary scale with vertical knob-detail

The census information gives the following:

1870 census, Brooklyn, 16th Ward, Charles Reinhart [sic], age 33, Machinist, b. Saxony, m. Mary, age 34, b. Bavaria, Emilia, age 9, Catherine, age 4, Charles, age 2, and Ann, age 2 months, all born in NY.

1880 census, Brooklyn, Charles Rheinhardt [sic], age 43, Machinist, b. Darmstadt, m. Mary, age 48, b. Bavaria, Emily, age 19, Charles, age 10, Mary, age 8, and Louisa, age 6, all born in NY.

1900 census, Brooklyn, 16th Ward, 72 Stagg St., Charles Reinhardt, age 63, Scale Maker, b. Jan 1837 in Germany, emigrated 1859, married 2 years to Caroline, age 55, b. Germany, emigrated 1865.

1910 census, Brooklyn, 16th Ward, 150 Ten Eyck St., Caroline Reinhardt, age 65, widow, b. Germany, emigrated 1865, cook for private family.

Reinhardt dabbled somewhat in politics, as indicated by a contemporary 1889 Brooklyn newspaper article on the nomination of Alderman candidates from the Sixteenth Ward:

Mr. Reinhardt is a member of Reinhardt & Co., manufacturers of scales and weights, at 72 Stagg Street. He is a substantial citizen and has never aspired to political distinction.

Earlier, Reinhardt was elected secretary at an 1884 meeting of German Republicans for the purpose of organizing a German Republican Blaine & Logan Campaign Club of the 16th Ward. A total of 77 men signed the roll as members to campaign against Democrats Cleveland and

Hendricks, who later won the 1884 Presidential election.

To highlight how times have changed, one of his employees was severely sentenced after stealing \$11 in 1889:

William T. Weger charged with appropriating \$11, the property of his employer, Charles Reinhardt, of 72 Stagg Street, was this morning sent by Justice Nacher to the House of Refuge.

The directory and census information show that Charles Reinhardt emigrated from Germany in 1859, started in Brooklyn as a cutler in 1866, was an instrument maker from 1868 until 1872, and was a scale maker from 1873 until at least 1900. He died prior to 1910. Reinhardt appears to have been the maker of this scale, and Cyrani may have provided the idea for the invention. Because of his long working career, other examples of signed Reinhardt scales are sure to surface.

Acknowledgements

The author would like to express appreciation to the staff at the Hagley Library for the use of their extensive city directory resources.

Notes

1. Bill and Jan Berning. *Scales, a Collector's Guide*. Schiffer Publishing Ltd., copyright 1999, page 144.
2. Steve Beare. *Directory of 19th Century American Scale Makers*, in progress.
3. *Equilibrium* 2637-2639, 2663-2671, 2696-2700, 2726-2728, 2747-2755, 2779-2784, 2808- 2811, 2842-2844, 2869-2871.
4. All census information is through the online index of ancestry.com. Index spellings are retained, even if incorrect, to help relocate census images. Many local public libraries and educational institutions now have online subscriptions to this valuable database under the name of either ProQuest or HeritageQuest.
5. *Brooklyn Daily Eagle*, Oct 20, 1889
6. *Brooklyn Daily Eagle*, July 23, 1884
7. *Brooklyn Daily Eagle*, Jan. 12, 1889



Figure 8A. // Apothecary scale with horizontal knob.

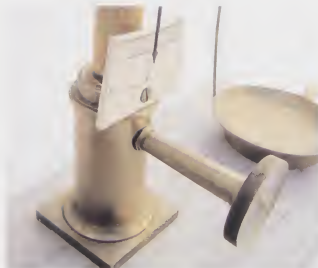


Figure 8B. // Apothecary scale with horizontal knob-detail.

4. All census information is through the online index of ancestry.com. Index spellings are retained, even if incorrect, to help relocate census images. Many local public libraries and educational institutions now have online subscriptions to this valuable database under the name of either ProQuest or HeritageQuest.

5. *Brooklyn Daily Eagle*, Oct 20, 1889

6. *Brooklyn Daily Eagle*, July 23, 1884

7. *Brooklyn Daily Eagle*, Jan. 12, 1889



Figure 9. // Numbered frame interior and drawer bottom.

Notes & Queries

REIN J KOK

N & Q No. 151

In *Equilibrium* 2003, number 2, I found some information about US Patent 250,413, Dec. 6, 1881 of the Albracht Horn letter scale.

I am a Dutch collector of letter scales and very interested in this scale. There are different versions made of this beautiful scale. I possess a Dutch and French one. Further there exist English and German examples of it.

A German collector and I prepared an article about these scales in the German magazine *Mass und Gewicht*.

Does a US example of it also exist? If so, can you send a picture of it?

Can any member help locate a picture or example of the American Albracht Horn scale?

Fig. 1. M J Albracht's French postal scale.



Fig. 3. M J Albracht's Dutch postal scale.

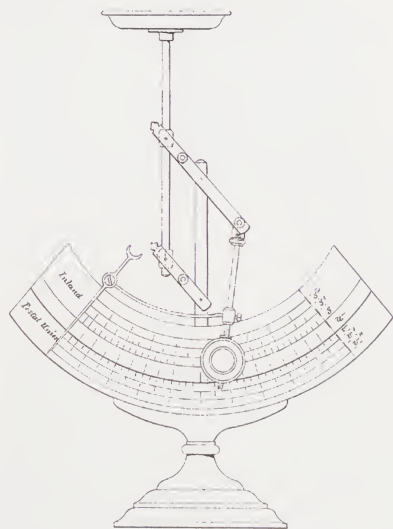


Fig. 2. M J Albracht Jr's US patent no. 250,413 of Dec. 6, 1881. Albracht Jr. of Amsterdam, Netherlands, designed this scale much like the more common European quadrant postal scales. Rather than having a dial that is offset to the right or left, the dial is symmetrically located on the base. His scale also incorporates a postage rate chart for letters, printed matter, and merchandise.



Hanging Zeniths - Chicken or Turkey?

BY CHARLEY AMSBAUGH



Figure 1. Zenith Pedigree Scale, Earlville, N.Y.



Figure 2. Zenith Pedigree Scale, Earlville, N.Y.

Can you tell the difference between the Zenith Pedigree Scale on the left (Figure 1) and the Zenith Pedigree Scale on the right (Figure 2), both of which were made in Earlville, NY? Except for obvious differences in lighting and shooting angles, they could be the same scale, right? At first glance, most of us would probably say "Yes," but, before you do, take a closer look at the graduated scales, one for chicken eggs on the left (Figure 3) and one for turkey eggs on the right (Figure 4).



Fig 3. Zenith Pedigree Scale for Chicken Eggs (graduated 16-32 ounces per dozen)



Fig 4. Zenith Pedigree Scale for Turkey Eggs (graduated 22-44 ounces per dozen)

A Hanging Zenith for Turkey Eggs?

Never heard of a “Hanging Zenith” for turkey eggs before? Well, I had read about them in old poultry equipment catalogs, but I had never seen one myself or heard of anyone who had ever seen a turkey model of the “Hanging Zenith,” either, so I was beginning to wonder if any Zenith Pedigree Turkey Egg Scales had actually been made. You can image my surprise when a friend sent me some pictures of a Pedigree Turkey Egg Scale she had bought on eBay – there was no mistaking that 22-44 oz scale at the top. But, before we discuss the turkey model any further, perhaps we should discuss the chicken model, which quite clearly came first.

Zenith Pedigrees in General

Officially called the Zenith Pedigree Scale, the “Hanging Zenith,” so called because of the hook atop the T-shaped upright from which it could be hung on a wire or small rope, originally came from O.W. Bedell’s workshop behind his home at 5 Taylor Avenue, Earlville, New York, with a detachable base. The base, of course, allowed the scale to be set on a level surface, while the hook allowed it to be hung *at the nest or where convenient for fast, accurate grading*, as described in a 1954 catalog published by the Northeastern Supply Co. (NORSCO) of Ipswich, Massachusetts. Since some of the scales got separated from their bases over the years, it is not unusual to find a Hanging Zenith without a base. In fact, sometimes it’s harder to find one with a base.

Without the base, each Hanging Zenith measures almost 10 inches in height to the top of the T-shaped upright. The length of the hook may vary somewhat, so the total height of a Hanging Zenith normally ranges from 11½ to 12 inches without a base, or 12 to 12½ inches with a base. The base measures about ¾ inches wide by 6¼ inches long, but since the egg pan protrudes beyond the end of the base, the total length of a Hanging Zenith is almost 7½ inches. By comparison, Bedell’s table model Zenith Egg Grading Scale (Figure 6), shown here between an early Hanging Zenith from the 1930s (Figure 5) and a later one from the 1940s (Figure 7), measures about 8½ inches in height; its base is 2¼ inches wide by 6¼ inches long.



Fig. 5. ⚡ First Model of Hanging Zenith patent applied for – with base, by O.W. Bedell.



Fig. 6. ⚡ Table Model Zenith Egg Grading Scale.



Fig. 7. ⚡ Later model of Zenith Pedigree Scale mfg. by O.W. Bedell, Earlville, N.Y.

Since the Zenith Pedigree Scale and the table model Zenith Egg Grading Scale discussed in the last three issues of EQM (pp 3056-3059, 3081-3084, 3101-3104) were invented by the same man, Orlando W. Bedell, they share many features, most notably the counterweight, the pointer, the T-shaped graduated scale and the egg cup. The T-scale and the pointer are shaped differently on the two scales, of course, but the sizes are the same.

The scale on the first model of the Hanging Zenith (Figure 5) was graduated in $\frac{1}{2}$ -ounce increments from 10 to 30 ounces. The scale on the later model of the Hanging Zenith, the Zenith Pedigree Scale (Figure 7), is graduated in $\frac{1}{2}$ -ounce increments from 16 to 32 ounces, compared to the Zenith table model (Figure 6), which is graduated in 1-ounce increments from 18 to 30. Changes in the labeling and choice of paint used for the Zenith Pedigree and the Zenith table model evolved over time, as a result of changes in ownership and location. The counterweight and the main body of the Pedigree have always been made of cast iron, and the T-shaped upright and scale head have always been made of pot metal and cast as one piece. Like the table model, the counterweight on the Pedigree has always been red, although a darker hue in the beginning than on later models. The main body of the Pedigree was painted black in the beginning, with a paper label (Figure 8) attached to the large, round piece of metal at the bottom. Bedell later had patterns made which cast his label (Figure 9) on the front face of the round piece at the bottom and began using a light blue colored paint for the main body as shown in Figure 7 above. The removable base of all Zenith Pedigree Scales has always been an unpainted gray color.



Fig. 8. Paper Label found on the earliest Bedell Zenith Pedigree egg scales.



Fig. 9. Cast Iron Label found cast into the front face of the round piece at the bottom of later Zenith Pedigree egg scales.

When Bedell sold the Zenith production rights to the Cooperative Grange League Federation (G.L.F.) in Earlville in 1948, the Grange simply ground off the words "MFG. BY O.W. BEDELL" from the original patterns, thus creating an empty space (Figure 10) where those words had been, but leaving Earlville, N.Y. When Agway was formed from the Grange and two other farm cooperatives in 1964, a new Agway farm store was established in Cortland, N.Y. and everything was moved there from the old Grange store in Earlville. At that time, the words "Earlville, N.Y." were ground off the Pedigree label, leaving the simple label "Zenith Pedigree Scale" (Figure 11), which is what was used for the rest of the Pedigree's production run.



Fig. 10. Pedigree label used by the Grange in Earlville (1948-1964).



Fig. 11. Pedigree label used in Cortland, Lowville and New Woodstock, NY (1964-1980s).

Label + Body Color = Vintage

As you will recall from the last article on the Zeniths, Bud Pratt worked for the Grange in Earlville and for Agway in Cortland as their Specialty Manager. When he acquired the Zenith business from Agway in the early 1970s, Pratt chose gray as the color he would use for the lower part of both the table model Zenith Egg Grader and the Zenith Pedigree. When the Zenith master patterns were destroyed in a fire at the Lyons Foundry in Greene, NY, in the early 1980s, he had new patterns made for the table model, but not for the Pedigree, so no more Zenith Pedigrees were made after about 1982. So, a “Zenith Pedigree Scale” with a light blue body and only those words on the label would have been made by Pratt as an Agway employee in Cortland; whereas a Pedigree with the same label, but with a gray body, would have been made by Pratt as a private businessman either in New Woodstock (ca. 1972-1974), in Lowville (1974-1979), or back in New Woodstock (1979-ca. 1982).

Still in Use

Although Zenith Pedigree Egg Scales have not been produced since about 1982, they are still in active use, especially on breeding farms dedicated to improving the flock. In the summer of 2005, Tim Coon, who currently owns and operates the Zenith Egg Scale business, received two dozen Zenith Pedigree Chicken Egg Scales which were in need of repair from a breeding farm in New England. Since they can't buy any more new ones, they just keep repairing the old ones.

Zenith Pedigree Turkey Scale

Bud Pratt's widow, Sara, told me recently that her husband made a lot of improvements in products which Agway was producing while he worked for them. Someone -- it could have been Bedell, but I believe it was Pratt -- modified the chicken model of the Zenith Pedigree and produced a turkey model. Careful comparison of the two models reveals that the measurements of corresponding parts are identical, with one exception -- the thickness of the lower half of the counterweight. The counterweight for the chicken model (Figure 12) is $\frac{3}{8}$ " thick throughout. The lower half of the figure-8-shaped part of the counterweight on the turkey model (Figure 13) is a full $\frac{1}{2}$ " thick. Norm Cima's careful examination of the counterweight on the turkey model indicates that the pattern for the chicken model was modified to add an extra $\frac{1}{8}$ " of cast iron to the back of the lower half of the figure-8-shaped part of the counterweight to provide enough weight to counterbalance the heavier turkey eggs. So, what looks like a $\frac{1}{8}$ " thick disc attached to the back of the counterweight is actually part of the original casting.



The other difference between the chicken and the turkey models, of course, is the graduation of each one's scale, with the chicken scale graduated in 1-ounce increments from 16 to 32 ounces per dozen (Figure 14), and the turkey scale graduated in either 1- (Figure 15) or 2-ounce (Figure 16) increments from 22 to 44 ounces per dozen.

Original Price Tags

The 1954 NORSCO catalog referred to at the beginning of this article offered the Zenith Pedigree Turkey Egg Grader for \$4.04, compared with \$3.95 for the table model Zenith

Fig 12. ♀♀ Counterweight on Pedigree Chicken Model is $\frac{3}{8}$ " thick throughout.

Fig 13. ♀♀ Counterweight on Pedigree Turkey Model is $\frac{1}{2}$ " thick at bottom.





Fig 14.  Pedigree Chicken Scale (16-32 oz. by 1 oz.).

Fig 15.  Pedigree Turkey Scale (22-44 oz. by 2 oz.).

Fig 16.  Pedigree Turkey Scale (22-44 oz. by 1 oz.).



Egg Grader in that same catalog. In 1962 and 1963, Ketchum's of Ottawa, Ltd., was selling the Zenith Pedigree Chicken Egg Grader for Canadian \$9.95, with a test weight. Extra test weights cost \$1.00 each. Ketchum did not offer the turkey model.

Acknowledgements

Thanks to Kathy Gamber for sending me pictures of the Zenith Pedigree Turkey Scale she got on eBay. Thanks to Jan Berning for "discovering" Norm Cima's Zenith Pedigree Turkey Scale among his dozen or so "miscellaneous" egg scales and sending me pictures of it for this article. Special thanks to Norm Cima for sending me more pictures of his Pedigree Turkey Scale and helping me puzzle out how the chicken model of the Pedigree was modified to create the turkey model.

Old Adverts

Figure 1.  Foyer postal scale advertising from 1904.

The Foyer Postal Scale



\$2.50

Retail Price 1 Pound Scale, \$3.50 2 Pound Scale, \$5.00 4 Pound Scale, \$8.00

Figure 2.  Old Plastic blotter cover advertising the rare Lincoln Coin-operated penny scale.

Bill Berning Collection FOYER MANUFACTURING CO.

81 Fifth Ave., CHICAGO, ILL.



CHARACTER

THE "Lincoln" SCALE

Has CHARACTER
Turns Copper into Gold
ACCURATE — DURABLE — ARTISTIC FINISH
Takes Up Small Floor Space

Manufactured by
THE LINCOLN SCALE CO.
2137 Tryon Lane Phone Gar. 3455
TOLEDO, OHIO



MADE IN U.S.A.

A Tale Of Two German Money Scales

BY KEN GOVIER

Browsing an Antique Fair at the National Exhibition Centre, Birmingham, my eye settled on an attractive German money scale (Photo A). The usual label identifying the maker and his location was missing but the weights, intriguingly knobbed and engraved Ducat, Carlin, Pistole, Sever and S.L./L.S.DOR, were like a magnet drawing me ever closer. Closing in on those unusual weights a 1760 date stamp came into view and triggered my collectors' compulsive 'must have it' urges.

Closer examination in the comfort of home coupled with a search through old EQM's, catalogues and Gerard Houben's *The Weighing of Money* established pretty conclusively that the scale had probably been manufactured at Solingen in the Dukedom of Berg and County of Mark - an area just north of Cologne where a money scale industry flourished from 1750 to the early 1800's. But there was very little information about those intriguing weights.

Seeking enlightenment I published an article in News & Views. George Theuerkauf, whose friend Günter Unshelm had been researching a similar scale (Photo B), responded from Germany. In due course Günter was able to send me the results of his efforts, these are reproduced below. Additional supporting comments not attributable to Günter are shown in italics.

Identification of the scale shown in photo A:

From his research and critical appraisal of our two scales (photos A & B), Günter confirmed the scale had been produced just north of Cologne and confidently attributed manufacture to: Joh. Philipp Herbertz senior of Solhlingen. Johan died 26th February 1770 aged 70 years; he had three sons engaged in scale making:

- (1) Johan Abraham - baptised 17th February 1725, died c1764.
- (2) Johan Wilhelm - baptised 2nd December 1726, died in London.
- (3) Johan Philipp - baptised 14th April 1736, died c1778.

The scale in Photo A was 're-adjusted' at Frankfurt / Main when the original scale and weights would have been examined by the "Munzrat / Warden" (title of a civil servant supervising the correctness of coin weights, scales etc) and stamped with the Frankfurt Eagle as confirmation. Those weights in the scale stamped with the Berg Lion would have been added later.

Analysis of weights fitted to the scale shown in photo A:

In his analysis Günter refers to a number of terms used in the Kingdom of Prussia in relation to weights fitted to gold coin scales. 'Normal Weight' is that of a gold coin as minted, 'Passing Weight' is the weight deemed acceptable for a well used gold coin. Any coin below the passing [current] weight was withdrawn from circulation. The term 'Fine Gold' refers to the weight of gold in the whole coin, [so] comparing the fine gold and actual weight gave an indication of [the percentage and] quality of the gold used in the coin - deal-



Photo A / / Joh. Philipp Herbertz senior of Solhlingen money scale.



Photo B / / Günter Unshelm's money scale.

ers and bankers of the time knew the amount of fine gold in every gold coin in circulation. The most popular gold coin through the centuries was the Hungarian Ducat because of the high proportion of fine gold i.e. Normal Weight 3.49g, Fine Weight 3.44g.

Footnote A: Coins represented by the weights under consideration were known by many 'conventional' names, not necessarily the official ones.

For the weights fitted to the scale illustrated in photo A, Günter comments as follows: -

1 Carlin (Carolin)

Normal weight: 9.735g Fine gold: 7.504g

Struck in 1726 by the Bavarian elector Karl Albrecht (1726 – 1745) based on the example of the French Louis d'or.

1 Ducat (Dukat)

Normal weight: 3.49g Fine gold: 3.44g

The Ducat was raised to be the main gold coin of the German Reich by Ferdinand I (1556 – 1564)

Footnote B: Any gold coin weighing about 3.5g could have been known by this name and there was a profusion of ducats in circulation for these gold coins were made in many locations. The earliest came from Venice but those in the scale were obviously intended for the versions that were circulated in the 18th century and minted in Hungary, Poland, etc etc.

1 Marco Ducat (MC Ducat/(possibly) Moroccan Ducat)

Normal weight: 3.52g Fine gold: 3.44g

Also found in Dutch and Cologne scales:

MD = moorse ducat TD = turksc ducat

This weight only found in Herbertz, Aeckersberg and Forstthoff scales. The Moroccan term for this coin is Dinar. According to Arent Pol [in his book] *Noord Nedelanse Muntgewichten* [it is the] equivalent to 2 Dinar of 4.6g but weights found in the Berg area are heavier

1 S.L.DOR (Schild or old Louis dor) by Louis XV and XV1 (1726 – 1785)

Normal weight: 8.1584g Fine gold: 7.4786g

Since 1640 the main gold coin in France, based on the example of the Spanish Double Escudo

Footnote C: Usually attributed to the old French Louis dor coined before 1726.

1 Maxdor

Normal weight: 6.4986g Fine gold: 5.0093g

Gold coin struck in 1715 by Bavarian Elector Maximilian Emanuel (1679 – 1726), replaced in 1726 by the Carolin.

1 Pistol(c)

Normal weight: 6.76g Fine gold: 6.2 g

The Pistole is the German name (found mainly in scales from the Berg and Mark area) for the Spanish Double Escudo struck since 1566 that became the pattern for the French Louis dor. Also known as Dublon(e), Duplone or Doppia.

Footnote D: Weights engraved Pistole Italia covered similar gold coins minted in various Italian city-states.

1 Severin (Souveraindor/Souverein)

Normal weight: 5.5564g Fine gold: 5.0982g

German name for the Souveraindor being circulated in the Roman – German Empire, introduced in 1612 in the Austrian Netherlands according to the English model.

Footnote E: Also known as Sovrano. The term 'English Model' refers to the Tudor version, not that of the 19th century.

Notes

I am very appreciative of contributions from others towards preparing this article and gratefully acknowledge the assistance of George Theurkauf for his interest, Günter Unshelm for his extensive research work, Norman Biggs for his overview and supporting comments and Thomas Allgeier for translating Günter's original manuscript.

1883 Research Study Used a Fairbanks Post Office Scale

MIREYA DIAZ & DUNCAN NEUHAUSER

In 1883 Charles Peirce and Joseph Jastrow used a pan and beam Fairbank's post office scale in a landmark research study. What was the study? Why is it a landmark? Can we repeat this study today? To help answer this question, we have sought and need help from collectors of antique scales.

Professor Stephen Stigler describes Charles Peirce as one of the two greatest American scientific minds of the 1800's. He is a founder of "pragmatism" and a website is devoted to his contributions. At the time of this study Peirce was an instructor at Johns Hopkins University in Baltimore, Maryland. The question he wanted to study was how small a difference in weight can a human being detect. A straight forward question, but tricky to answer.

He and his colleague did this using an 1880's era Fairbanks post office scale. He and his colleague Joseph Jastrow would hold the bar [beam] and say whether they thought the weight in the pan was more or less. To do this the person had to be "blinded" to the actual weight in the pan. If you saw the weight you would know the answer. So a barrier was placed at right angles to the bar and pan of the scale so the subject could not see the pan. The act of adding and subtracting the weight had to be silent. The subject had to let go the bar while the weights were changed.

The investigator might lapse into a predictable habit of adding and removing the weights which the subject might figure out. They created a special deck of cards, shuffled them and used them to indicate whether to add or subtract a weight. This is the first formal use, known to us, of randomization in a scientific experiment.

Randomization, blinding and experimental design

The concept of a controlled experimental trial comparing different groups or different experimental circumstances is to be seen in the Biblical Book of Daniel (first 21 verses). The concept of blinding is as old as the statutes of blindfolded justice, the symbol of judicial decision making without favoritism. The idea of randomization can be found in the Biblical "drawing of lots." We think Peirce and Jastrow were the first to bring all three of these concepts together in a purposely designed research study. Their study is also a contribution to mathematical statistics, but that is another story. This is why this study is a methodologic landmark even if it is little known today, perhaps because the question they asked does not excite academics much now.

Replication and Scientific Theory

The real proof of scientific knowledge is based on our ability to repeat the same experiment and get the same results. Let go of a penny. If it falls to the floor you have tested the theory of gravity. If your penny rises to the ceiling you can reject this theory of gravity. (Perhaps the reason this happened is that you are a student in Harry Potter's magic arts class at Hogwarts School.)

We have set out to see if we can repeat the Peirce and Jastrow study as closely as we can as described in their original published report. To do so we needed a similar Fairbanks post office scale of the 1883 era. Jan Berning was kind enough to loan us such a scale. Is it the exact type as used in this study? We do not know for sure.

We think Peirce and Jastrow purposely chose an easy to find scale so that others could repeat their study in the 1880's. Perhaps they did not think about repeating this study 125 years later. Possibly, at Johns Hopkins, they had access to much more precise scales. Perhaps they chose not to use them for two reasons. The Fairbanks scale could more easily fit under a blinding barrier. It was easier for others to find a similar scale.

Today we have another issue. If we use an 1880s scale today will it be as accurate today as it was a century

ago? Even Peirce and Jastrow's detailed description is not sufficient for us to do exactly as they did. If replication is at the heart of science these are important questions. For this reason researchers like us need the help and advice of experts on antique scales like Jan Berning and the readers of this journal.

The movie "Amadeus" describes Mozart as a musical genius, but in the rest of his life [he was] often outrageous and even offensive. A similar story could be told of Peirce. He graduated at near the bottom of his Harvard College class in 1859. His faculty appointment at John Hopkins was not renewed possibly because he divorced his wife and remarried, which was unacceptable behavior then. He may have been taking opium at the time. It was legally available then, and other scientists like Sigmund Freud used it.

Good music and good research can be judged independent of personality. Scientific theory should hold up to repeated tests. In our effort to try to repeat this study we were led into the fascinating history of scales and their enthusiastic collectors.

Notes

1. C. S. Peirce and J. Jastrow "On Small Differences of Sensation" *Memoirs of the National Academy of Sciences for 1884*. Washington, D.C. Vol. 3, pp 75-83.
2. Stephen M. Stigler *Statistics on The Table* Cambridge Harvard University Press, 1999 Chapter 10.
3. *The Peirce Edition Project* Indiana University Purdue. <http://www.iupui.edu/Peirce/>
4. M. Diaz, D. Neuhauser's "Shuffle the Deck, Flip that Coin: randomization comes to medicine" *Quality and Safety in Health Care*. Vol. 13, 2004 pp 315-316.
5. The postal scale used was a small steelyard Fairbanks postal with an 8 oz capacity.

About the Authors

The authors are both on the faculty of the Department of Epidemiology and Biostatistics, Medical School, Case Western Reserve University, Cleveland, Ohio. They are interested in the evidence of effectiveness for medical treatments.

Pump Up the Volume

BY JOHN KNIGHTS

N & Q No. 152

Weight and volume have always been intimately associated. All rational systems of weights and measures have used weight to define volume, as in the 1824 Imperial System or volume to define weight as in the Metric System. Current practice is to divorce the definitions, somewhat, in that the modern litre is now defined as being identical to the cubic decimetre, and the kilogram is referred to the International Standard alone, without any attempt to identify a 'natural' source.

For practical purposes, however, the kilogram is equal to the mass of a litre of water and any deviations from this only exist at the highest levels of accuracy.

Whilst water has usually been the medium of choice to transform volume into weight; some earlier systems did rely on other media. It would appear that in the case of the Exchequer Standards, wheat may have been chosen as the transfer medium; and even today when both cereals and units of measurement have undergone various transmogrifications in the interim, a gallon of wheat is still found to weigh something not totally dissimilar to half an avoirdupois stone [7 lbs].

In modern metrology, indeed, the two concepts are scarcely distinguishable

Modern standards of volume are generally calibrated gravimetrically and if you have ever bought a packet of frozen peas, marked with a statement of weight, there is a fair chance that that weight was actually determined by a volumetric filler. These devices are less complex than automatic weighers and can be even more accurate when dispensing free-flowing materials of uniform consistency.

Grain is a commodity that is now sold by weight, a practice made possible and convenient by the widespread availability of automatic weighing machines and weighbridges that can ascertain weight by the lorry load.

Prior to the burgeoning of industrial weighing, such free-flowing materials were bought and sold by the bushel, and the bushel measure was an essential tool of the trade of the corn merchant and miller.

In those days, grain was put in to sacks, containing half a quarter or 4 bushels for sale and this measuring would have been carried out using a simple wooden bushel, which was the largest measure available. It would have been a laborious business fraught with some potential for error and it seemed strange that there had been no attempts, in the nineteenth century, to mechanise the process.

The measurement of liquids was very soon automated when there was a need to dispense products such as oil and petrol in larger quantities than could be readily accomplished with a simple measure, but no dry measure equivalent to the petrol pump ever seems to have been constructed.

Or so I thought!

At a recent antique fair I came across an item that made me wonder again whether some attempts may have been made to speed up the grain measuring process.

The device was somewhat unprepossessing and it was only my perverse delight in great lumps of cast iron that drew my eye towards it. It looked a little like one of those early, coin operated, slot machines that used to dispense bars of chocolate on railway stations, only rather more heavy duty. An indication of its bulk was the presence of the six very substantial lugs, cast onto the back, with which it could be screwed to a wall.

I fell into conversation with the stall holder, whom, one suspected, was still wondering how he came to actually have such a thing on his stall, and was fervently hoping he would find someone stupid enough to buy it so he didn't have to carry it home.

When it comes to 'old iron', stupid is my middle name and as soon as I discovered it appeared to have some, albeit ill-defined, measuring capability, his worries were at an end.

Despite its bulk, the item was just about portable and was duly ported, past the pitying glances of the assembled, somewhat more discerning, public to the boot of my car.

The device can perhaps be best envisaged as a grain 'optic'; one of those little push-up devices that measures tots of spirit in pubs and bars (in the UK at least; other cultures, where accurate measure appears to be of lesser importance, favour the more theatrical 'free pouring from a great height' method).

The essential part of the device is a measuring chamber, the filling and emptying of which is controlled by sliding valves at the top and bottom.

The valves are configured so there is a degree of overlap in their operation. In this way the top valve is always completely closed before the bottom one begins to open and vice versa, thus preventing any leakage into or out of the measuring chamber, during the measuring cycle.

The valves are operated by a 'one armed bandit' type lever on the side which moves through about 45 degrees during each cycle. The handle is actually a surprisingly decorative component; complete with a nicely turned, tapering, wooden hand grip, patinated by time and use; on what is



otherwise a particularly functional piece of equipment. There is a key-hole near the handle with a key, with which the handle can be locked, so as to prevent further operation.

The top opening would presumably have been connected to a bulk supply of grain which would have flowed into the device under gravity. Measured quantities of grain would be dispensed from the opening at the base.

A bit of poking about with a tape measure indicated that the measuring chamber should yield about 220 cu in during each cycle. This was subsequently confirmed by passing grain through the mechanism. Measurement of the output was not a precision affair, relying on somewhat ancient wooden measures from my collection. I however arrived at a volume of about 127 fl oz as the output of a single delivery. This seemed a strange figure until it dawned on me that 128 fl oz was, in fact 0.8 gallon which is $\frac{1}{10}$ of a bushel, so I concluded that this was the nominal quantity intended to be delivered.

It still has to be wondered, in what circumstances, it was actually used!

There is little on the device, itself, to assist. There is no marking to describe its purpose; no trade name, no registration or patent number, no indication of its nominal capacity, no instructions for use, and no counting device which would presumably be necessary if it was intended to dispense multiple deliveries to fill sacks etc for sale.

It does, however, proudly bear a maker's name boldly cast into the front panel;

YOUNG & CO

Manufacturers

Westminster

London &

Manchester

This suggests a maker of some substance, but searches into its identity have so far proved fruitless. They do not appear to be one of the 'Youngs', so far identified as manufacturers of iron weights, although they do seem to have been engaged in iron moulding at more than one site.

I suspect this type of device would have been used as part of an industrial process rather than as an instrument of trade. I imagine it may have seen service in a brewery or something similar, where it was necessary to measure out a quantity of grain for processing. Measuring by this method would have been physically less demanding than using a bushel measure, but the comparatively small quantity dispensed would still make it a fairly tedious process to measure out any sizeable volume, ie 40 dispensations per sack.

I've never come across such an instrument in all my years poking around the inner recesses of manufacturing premises etc and I thought I'd seen most of what there was in the way of weird measuring devices.

If any one knows who Young & Co. were, or what this particular apparatus was used for, it would fill a previously unsuspected gap in my knowledge.

Showcase

A & G H Slight of Edinburgh, Scotland made this 28 cm (11 inch) long dynamometer to measure 10 Cwt. Other interesting dynamometers may be found in EQM on pages 2169-2170, 224, 546-547, 1439 and 2169-2170.

Woffendin collection.



Showcase

↗ The beam on this dainty postal scale is stamped Fairbanks. The beam is graduated in ounces from 1 to 4 by $\frac{1}{2}$ oz. The letter plate measures 3" in diameter, the base is $\frac{3}{8}$ " in diameter, the scale is $\frac{3}{8}$ " tall and the beam is 5" long from the support posts to the end. It is finished in the original black enamel with gold, red, and green pin striping.



George Anna Wehman collection.



↗ This colorful, toy scale was made in Japan and is marked Trademark STS in a diamond. It has a capacity of 1000 and measures $4\frac{1}{4}$ " from back to front by $4\frac{1}{2}$ " accross and $5\frac{1}{2}$ " tall with a $3\frac{1}{4}$ " diameter dial. It is made from tin, has a glass face cover and a spring mechanism.

Jan Berning Collection

↗ This Detroit Automatic Scale Co. two pound computing candy scale has an off-set head.

Jim Dietrich Collection



↗ Hanin of Paris made this diminutive C- spring balance c1820. It measures $3\frac{1}{4}$ " in diameter and is 7" long including the ring and hook. Its capacity 25 kilos or 50 Anglican pounds.



Jan Berning collection.



This gorgeous gilded pendulum postal by Marion and Co. of London and Paris has a poise on a movable arm, so that the dog-bone shaped poise operates at two leverages (one up near the fulcrum, and one well out from the fulcrum). It is up in position to weigh light letters in these pictures.

It has two sets of graduations on the dual dials which are graduated in weight and postage from 0-4 oz or 0-2d on the front dial and 4-8 oz or 2-3d on the rear dial.

This scale dates from the 1800s and the dials are graduated in weight and postage from 0-4 oz or 0-2d and 4-8 oz or 2-3d.

Marion made one other design of pendulum postal with a poise on an arm, but not as gorgeous as this one. It measures 8½" tall 5½" long 4½" wide and has an oval base.

Other Marion scales may be found on EQM pages 133, 484, 1255, 1257, 1361, 2645-2646, and 2956.



Ruth Shaw collection.



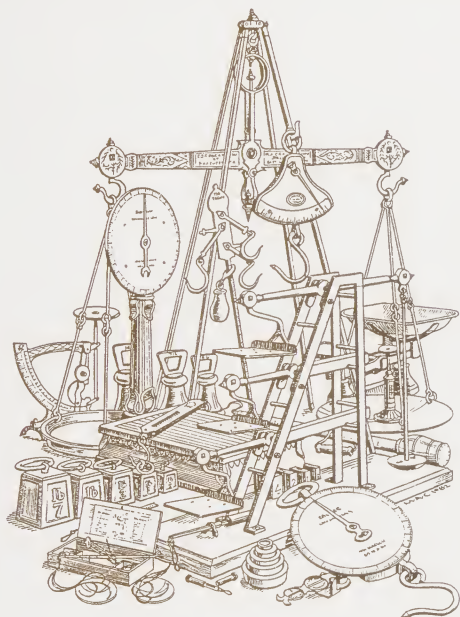
EQUILIBRIUM

QUARTERLY MAGAZINE OF THE INTERNATIONAL SOCIETY OF ANTIQUE SCALE COLLECTORS

MAY 4 - 7, 2006

CONVENTION ISSUE

SAN FRANCISCO, CA





ISASC CONVENTION SITES

1979	San Francisco, CA
1980	London, England
1980	New York City, NY
1981	Delft, The Netherlands
1983	Sindelfingen, West Germany
1984	Chicago, IL
1986	Washington, DC
1986	Paris, France
1987	Anaheim, CA
1988	Boston, MA
1989	San Francisco, CA
1990	Philadelphia, PA
1991	Chicago, IL
1992	San Diego, CA
1993	Baltimore, MD
1994	San Francisco, CA
1995	Hershey, PA
1996	New Orleans, LA
1997	Los Angeles, CA
1998	Toronto, Canada
1999	Atlanta, GA
2000	Seattle, WA
2001	Chicago, IL
2002	Pittsburgh, PA
2003	San Antonio, TX
2004	Minneapolis, MN
2005	Washington, DC

Welcome
to the
Twenty Eighth Convention
of the
International Society
of
Antique Scale Collectors



May 4-7, 2006
Holiday Inn, Golden Gateway
San Francisco, CA



INTERNATIONAL SOCIETY OF

P R O G

THURSDAY, MAY 4, 2005

2:00 P.M. - 5:00 P.M.
ARRIVAL • HOTEL CHECK IN AND
CONVENTION REGISTRATION

6:00 P.M. - 10:00 P.M.
SIGHT SEEING & DINNER AT SPINNAKER RESTAURANT SAUSALITO

FRIDAY, MAY 5, 2006

8:00 A.M. - 1:00 P.M.
TOUR TO VISIT BILL DONIGER AND THE LATE DR. WORMSER
SCALE COLLECTIONS

1:00 P.M. - 6:00 P.M.
ON YOUR OWN
HOTEL CHECK-IN AND CONVENTION REGISTRATION for FRIDAY ARRIVALS
Sightseeing • Shopping

6:30 P.M. - 'Til.....
COLLECTOR'S GET-TOGETHER, OFFICIAL WELCOME,
SCALE TALK, ALBUM-SHARING, CAMARADERIE
Light snacks and beverages will be available
Crystal Room - Main Floor

SATURDAY, MAY 6, 2006

9:00 A.M. - NOON
Emerald Room • Main Floor

"ARE YOU GETTING YOUR MONEY'S WORTH?"
*Rosalia P. Flores and Roger Macey, Division of Measurement Standards
Department of Food and Agriculture, State of California*

"JAPANESE & CHINESE SCALES USED in CALIFORNIA
SINCE the GOLD RUSH"
ISASC member Bill James

"JAPANESE LEARNS TO WEIGH"
ISASC speaker Norm Cima discusses a 1793 Hakari to check Oban against Funder

R A M

"WEIGHING WITH DIGITAL SCALES"

ISASC member Bill Reed.

12:15 P.M.- 1:30 P.M.

LUNCH

Crystal Room - Main Floor.

2:30 P.M. - 5:30 P.M.

SILENT AUCTION

Followed by Let's Make a Deal

Coordinated by Bob Jibben and Judy Soslan

Emerald Room - Main Floor.

6:30 P.M. - Til...

GALA RECEPTION AND BANQUET

Portola Room and Crystal Room - Main Floor

SUNDAY, MAY 7, 2006

9:00A.M. - 12 NOON

Emerald Room - Main Floor.

"SHOW AND TELL"

*Jerome Katz will introduce members who will
share scales from their collections.*

"TOWN HALL MEETING"

Officer reports, floor discussions and comments. Peter Laycock, President

12:15 P.M. - Til...

LUNCHEON BUFFET

Crystal Room

MONDAY, MAY 8, 2006

8:00 A.M. - 6:00 P.M.

**POST CONVENTION OPTIONAL TOUR to OROVILLE, CALIFORNIA
TO SEE SCALES COLLECTED BY CLEM MONDAY & KEN GOODHUE.**

*Dr. Robert Chandler, Historical Services, Wells Fargo Bank
will provide area historical commentary.*

SEE YOU NEXT YEAR IN DEARBORN, MICHIGAN!

IN ATTENDANCE*

Ben Amigable, Stockton, California
Charley Amsbaugh, Westminster, Maryland
Thomas and Joyce Anthony, Woodside, California
Steve and Kathy Barnett, Ellicott City, Maryland
Steven and Karen Beare, Wilmington, Delaware
Anne Beare, Wilmington, Delaware
Ralph Bergmann and Patricia Williams, San Rafael, California
Jan and William Berning, Sycamore, Illinois
Kurt and Ann Beyreis, Alexandria, Virginia
John and Betty Cheeseman, Dorset, England
Norman and Phyllis Cima, Menlo Park, California
Dick Clark, Portland, Oregon
Mike and Joan Crabtree, North Bend, Oregon
Harley and Shirley Crawford, Santa Rosa, California
William and Mary Ellen Doniger, Berkeley, California
Thomas Dooley, Sacramento, California
Leslie and Elaine Firth, Mercer, Pennsylvania
Robert and Rae Marie Foster, Dayton, Nevada
Joe and Carolyn Ghilarducci, Lakewood, Washington
Stan and Jeanne Hanssen, Fairacres, New Mexico
Carol and Bob Hayden, Austin, Texas
Gregory and Judy Hill, Mira Loma, California
Victoria Huntington, Delta, British Columbia, Canada
Irving and Rhoda Isicoff, Miami, Florida
Arline and Bill Jacobson, Bayside, New York
William and Nancy James, Orinda, California
Robert Jibben, Minneapolis, Minnesota
Jerome and Mary Katz, Rockville, Maryland
Dennis Kurlander, Santa Rosa, California
Peter and Dian Laycock, North York, Ontario, Canada
Pamela Laycock, North York, Ontario, Canada
Joe and Ruth Lenorovitz, Studio City, California
Clifford and DeVee Lushbough, Aurora, Colorado
Jan and Eva Macho, La Canada, California
Clem and Katharine Monday, Oroville, California

*Each listing indicates the member's name first.
Names of members attending their first convention are in italics.

IN ATTENDANCE*

Mary Anne Murphy, Pittsburgh, Pennsylvania
Lindsay Nielson, Ventura, California
Paul and Peggy O'Neil, Sun City West, Arizona
Catherine Panagakos, Greenville, South Carolina
Ray and Eileen Park, Noranda, Western Australia
William Parsons, Albany, Oregon
Donald Patten, Aptos, California
Larry Press, Jacksonville, Florida
William and Lynn Reed, San Rafael, California
Allan and Aviva Rodin, Northfield, Illinois
George and Fran Sherman, El Dorado Hills, California
Ben Smith, Jackson, Michigan
Eric and Judy Soslau, Austin, Texas
Albert Stirm, Polson, Montana
Lorraine Texeira and Mary Krause, Pleasanton, California
Tom and Paula Van Natta, Decatur, Alabama
Sally Van Natta, Santa Barbara, California
Richard and Jackie Wagers, Lodi, California
Deuell Wall and Brigitte Colzani, San Diego, California
Phil Wehman, Chattanooga, Tennessee
Ruth Willard, San Mateo, California
Gerald and Eva Wilson, Escondido, California
Charles Yarton, Lake Oswego, Oregon

CONVENTION NOTES

1. Bidder numbers for the Silent Auction are on the back of the name tag. Please wear tag to all events. If a seller needs additional bid sheets, contact Bob Jibben.
2. Be sure to bring your MEAL TICKET to each applicable meal.
3. Attire: Casual for days and evenings. Dress-up suggested for Saturday night banquet.

CONVENTION COMMITTEE

Ralph Bergmann - Chairman
Jan Berning, Norm Cima, Bill Doniger, Bill James,
Bill Reed, and Ruth Willard



Founded September, 1976

3616 Noakes St. • Los Angeles, CA 90023 • USA

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Vice Presidents.....	Steve Beare
	Robert Jibben
	Jerome Katz
	Mary Anne Murphy
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Executive Secretary.....	Jan Macho



A Balanced View

San Francisco Convention

Close to 100 enthusiastic scale collectors gathered in San Francisco to attend the 28th annual ISASC convention. Congratulations to convention chairman Ralph Bergmann and his committee for staging another first rate convention.

The weather, the hotel, the program and the camaraderie were all outstanding. The attendees were afforded the opportunity to view the three outstanding scale collections of Bill Doniger, Clem Monday and Ken Goodhue.

Regular convention events, the Friday night album sharing, the Saturday morning presentations, Show and Tell and the Annual General Meeting were all well received.

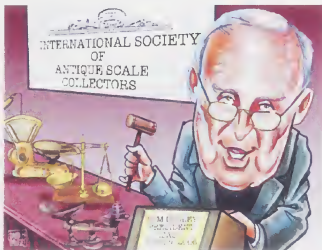
The Silent Auction and Lets Make a Deal provided ISASC members a chance to add to their collections resulting in record sales as more than 150 scales and other metrological materials were bought.

Retiring President Tom Dooley and retiring directors Ruth Willard and Steve Beare were honored at the gala banquet and thanked for their service to ISASC.

A preview of the 2007 convention to be held in Dearborn Michigan was presented by convention chairman Ben Smith. It promises to be another not to be missed event. Mark your calendars for May 17, 2007.

“Hope to See You in Dearborn!”

Tom Dooley
President ISASC
2000 to 2006



Steve Beare
Director ISASC
1998 to 2006



Ruth Willard
Founding Member ISASC
Editor EQM & Director 2000 to 2005



Board of Directors

After serving for seven and one half years Steve Beare has decided to step down as an ISASC Director. During that time Steve has made a major contribution to the Society as chairman of new member services. He was also instrumental in the development of the Endowment Committee, the ISASC web site and he led the conversion of EQM to color. Thanks Steve.

Kurt Beyreis has agreed to join the board to complete the one and a half year term vacated by Steve. Welcome Kurt we look forward to your enthusiastic participation on the board.

Bob Stein Gift to the ISASC Collection

We missed Bob and Margie Stein at the San Francisco convention. After a run of 27 consecutive conventions this is the first one that Bob has not attended. Bob your friends were asking after you and send their best wishes to you and Margie

Bob has generously donated all of his non scale related material to the ISASC Collection. It consists of a treasure trove of material; books, catalogues, societal historical documents, EQMs, newsletters, framed posters and paintings, post cards and many other pieces of metrological ephemera. He invited Kurt Beyreis and Jan Berning to his home late in April to begin cataloguing the material for its transition to the ISASC Collection. The Society is grateful to Bob and Margie for this gift. It will add a great deal to the societies burgeoning collection.

The ISASC Collection is housed in Pittsburg PA and is nicely displayed at our storage facility. The collection is maintained by the Endowment committee Chaired by Mary Anne Murphy. Should any member wish to view the collection please contact Mary Anne and I am sure she will be more that happy to arrange for you to view it.

ISASC Rack Card

At the annual general meeting in 2005 a number of members indicated that it would be helpful if the Society had a convenient information sheet that could be used to expand the awareness of ISASC.

Les Firth undertook the challenge to produce such a piece. Together with assistance from his daughter Rebecca and some colleagues at Penn State University the attached ISASC rack card was produced. Our thanks go to Les for his leadership and initiative in creating this colorful and informative overview of our society.

I think that you will agree that there are literally hundreds of collectors of scales who are not aware of ISASC. At any time in the scales category on EBay there are about eight hundred scales listed for sale. Country Sampler magazine lists the Top 10 collectibles for 2006 in its January Issue: Scales was number four.

The primary objective of producing this card is to expand the awareness of ISASC in an effort to attract new members. In that regard the Society needs your help. We would like to make these cards available to scale collectors across North America through distribution in antique malls, antique shops, antique fairs and any other locations where scale collectors are likely to congregate.

Attached to this newsletter you will find an order form. Please indicate how many you feel you can distribute. As a guideline we suggest 20 cards for each location. Please mail your completed order forms to

Cora Caley
ISASC Rack Card
3616 Noakes St.
Los Angeles, CA,
90023

Ruth Shaw 1939 – 2006

We are saddened to hear of the death of Ruth Shaw a long time enthusiastic member of ISASC. She was a truly dedicated scale collector. We remember her fondly for friendly warm presence at many of the ISASC conventions. Ruth passed away on April 14 2006 she is survived by her husband Don, her four children and four grandchildren. Our deepest condolences are passed to the Shaw family

Welcome To New Members

I would to take this opportunity to welcome the following new members and to encourage them contact any of the members of ISASC should they have any questions.

Vernon Renfro, Gridley CA, (Pamela)
George Sherman, El Dorado Hills, CA, (Frances)
Gene Burns, Clear Lake, WI, (Vicky)
Bruce Roseman, New York, NY, (Ellen)
Gary Force, St Charles, IL, (Mary)
Steven Ginsberg, Wakefield, MA, (Rita)

A Balanced Diet

A Balanced diet is a cookie in each hand!!

****So I guess justice is not blind after all****

Until next time I hope you find a few good scales or as Bill Doniger would say "having one of every scale is nice but having two is better"



Peter Laycock,
President ISASC



EQUILIBRIUM

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2006 ISSUE NO. 3

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Cover Picture

These German pendulum egg scales have colorful enamelled quadrant dials. The two on the left are for the German market while the one on the right is thought to be made for the British market. Made by P J Maul of Germany, the scales are pre-weighted for 40 grams at the zero position and has two positions for the poise. The dials are each graduated for 40 to 80 grams and the scales measure 95/8" to 10" tall. The letter system S, A, B, C & D is the common grading system in Germany.

Editor's note: I would like to request all members to contribute articles of any size, photos and descriptions to this, YOUR JOURNAL. Without your contributions EQM cannot continue. Please help support the EQM staff by submitting your material for our use.

Many Thanks,

Jan Berning

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Clean, Repair, Polish

BY KEN GOVIER

or just leave well alone?

We are all periodically faced by the dilemma of what to do with a newly-acquired scale.¹ If our collecting careers are to progress, the problems have to be dealt with. The purist will salivate at a patina laid down over a hundred years and, apart from carefully removing surface dust, will retain the scale in its 'as found' condition so as to admire the stains of ages deposited on a well-used scale. Other collectors cannot resist cleaning, repairing and polishing until their scale has regained that familiar, and sometimes attractive, 'almost new' finish.

My own view, once strongly-held, was that the ideal was to take restoration to the point where a scale had the appearance of a well-used and lovingly-maintained implement, but experience soon taught me that there is no such thing as one ideal standard of restoration. Consider, for example, a



Figure 1.  A decorative Sampson Mordan scale restored to its original highly-polished finish, on the assumption that it was kept in pristine condition and rarely used. The only clue to its age is preserved in the bent left-hand plate.



scale manufactured as a prestigious decorative desk embellishment that only got a few letters placed on it; this will look fantastic when restored to its original, highly-polished finish (Figure 1) and thus be a credit to its fastidious owner. However, I doubt that anyone would expect to see a genuine old working scale restored to such a pristine state. Signs of bruised wood,

Figure 2.  A letter/parcel scale made by W & T Avery, cleaned and lightly-polished so as to retain most of the original patina. This extra-large Registered Design scale has a 4 lbs poise, a higher capacity than is illustrated in the 1862 catalogue.

indented and scratched metal or worn brass weights are badges of honour - a sure indication of a long, honest working life, and that most prized of attributes - a genuine original scale.

Figure 2, a postal scale made by W & T Avery in about 1865, is perhaps a good example of a genuine scale that has been given the lightest of cleaning and polishing to retain most of the patina, and show just a hint of polished brass to provide a little sparkle - just as a housewife would have left it in 1865! To present such an honest working scale with its brass parts and its poises gleaming like a beacon, and its mahogany base stripped, stained and polished like glass would, I suggest, destroy its character and leave it exposed to the risk of being classified as a reproduction.

Figure 3 illustrates the problem of years of poor storage in a corrosive atmosphere, leaving blackened brass, compounded by crude cleaning with a liquid brass cleaner that has left a white powdery deposit that hardened into a crust. This has had the effect of making pale the hidden areas that should be dark, and leaving dark the exposed areas that were once shiny. The beginner might leap in, take the scale apart, and strip the brass back to shiny yellow, only to discover that the corrosion has bitten deeply into the brass, leaving it with pitting over the whole surface. A more experienced collector might use a lens to study the surface, and decide that such a basically handsome scale deserves gentle maintenance, perhaps a light clean with hand-dishwashing liquid and a brush to remove the white crust, then a hand-polish to hint at the shiny original, with a final application of silicone-free wax to protect the brass from further corrosion. This leaves the scale darker than it would have once looked but leaves it undamaged and protected. See Figure 4.

Scales with missing or broken parts and an incomplete set of weights pose problems for both the purist and the pragmatist. See Figure 9. Doing nothing and thus looking after a non-functioning eyesore (albeit, one that tells the student of scales something of its manufacture) gives little satisfaction, but how far should restoration be taken? Fitting a replacement part, that is an exact match to the original, and made from the same materials, is simply carrying out a repair to extend the working life of a scale. Done with precision and to a high standard, I think this perfectly acceptable. (A museum would do the same, but would not colour the replacement to blend in with the old parts, thus advertising the modern part.)



Figure 3. A heavily-contaminated Mordan postal scale before being cleaned. It is complete, and undamaged, so is well worth attention.

Figure 4. The finished condition of the scale in Figure 3. The bleached wood has been gently stained and polished. The brass was scrubbed and waxed.





Figure 5. *Two examples of S Mordan's scrolly A-frame.* The example above has four holes for the weights, but the weights do not fit the holes precisely, although the weights are Mordan weights. Mordan made about 22 styles of weights, many looking identical, but the sizes are very slightly different. These replacements are not the correct size, but, being so similar, they are very acceptable.

Figure 6. *The lower example has six holes, and has the original weights.* The scale has been cleaned so thoroughly that it looks very much as it would have looked when it was bought. The oxidation inside the scrolls has been removed. Many collectors prefer to leave the oxidation, and merely polish the accessible surfaces, as a proud housewife (or servant) would have done during its hundred years existence.



I would suggest that, ethically, any modern repair should be marked in a hidden area, and brought to the attention of a buyer. Too many of us have asked a seller whether any part has been repaired, and bought the scale for full market price, only to be told later that that very scale was for sale a month earlier without some vital part. If the seller had time to research a complete example, and copy the part precisely, that might not make us uneasy, but sometimes the repair proves to be very approximate, while the price was paid for perfection!

Quite recently I purchased a scale after being informed that a newly-made part had been fitted. My close examination failed to detect the replacement part and that was a good enough reason to go ahead with the purchase. I was delighted to get such a rare scale made by Narcissé Briais for the British market. I suspect that most collectors in similar circumstances (well, perhaps not the purists) would have done the same.

Missing weights are a real eyesore, and I am sure that most members feel that they have to do something about the gaps. Replacing with identical weights by the same maker is ideal, and most collectors avidly search for those precious weights. See figures 11 and 12. However, exact replacements are not always possible, and near-matches are rarely satisfactory. I would like to see someone specialising in manufacturing exact replicas of missing weights. Providing these weights were identified as replicas, I would regard them as perfectly acceptable replacements. By this means incomplete scales could be properly restored and gaps in weight-sets satisfactorily filled without deceiving potential purchasers and fellow-collectors.



Figure 7 & 7a. ➤ This American egg scale arrived with the cup forced apart, deluding the seller into believing that two eggs were to be weighed simultaneously!



Figure 8. ↙ Due to the wear on this egg scale it seemed anonymous. Compare it with EQM p. 381, fig. 15, the Reliable Egg Grader, made in Los Angeles, CA.





Figure 9. A Setton & Durward roberval postal scale with a lug broken off the A-frame. This has allowed the A frame to swivel on the front screw. The A frame has been removed at some time, and put back with the letter plate on the left, whereas it should be on the right. The style is high art-nouveau, but the design registration number 540718 cast underneath proves that the design was only registered in 1909. The postal rates are for 1897-1915, so this scale can be dated between 1909 and 1915.

Figure 10. An inexperienced restorer might vigorously polish the brass, and rapidly get the bright white shine of polished iron. If he tested the base and A frame with a magnet, he would discover that they were made of east-iron plated with brass. Only the beams and the pans are made of solid brass.

The weights shown are unique to Setton & Durward; they are capped weights, that is, basic iron weights that have specially-designed brass caps clipped over the iron. But it is obvious that the 4oz weight on the right is too large to sit in the hole. This is because this stand was designed to take Setton & Durward's other weights, the very similar ones made entirely of iron, brass-plated. These latter ones are very slightly smaller in diameter than the capped ones! So when replacing weights, even with those of the correct maker, check the size!



Figure 11. Three Setton & Durward weights. The left weight is the solid iron one, of the design intended for the scale shown in figure 10.

The middle weight is the ornate iron version with a very loose brass cap. It belongs on a plain roberval scale mounted on an oak base, the largest weight being the 4 oz one.

The right weight is the simple iron version with a brass cap that is not deeply impressed. It belongs on a plain roberval scale mounted on an oak base, the largest weight being an 8 oz one.

Figure 12. The same three Setton & Durward weights. The left weight is the solid iron weight with brass plating.

The middle weight shows the original British racing green that Setton & Durward sometimes used for the A-frame, used when the scale was mounted on a rectangular oak base.

The right weight shows a rim of rust where the brass cap is clipped over the iron.



Absolutely taboo is the falsification of an inspector's mark on a weight, but it has been done, and no doubt it will be done again. I have seen an inspector's mark on a trade weight purporting to be made in Edward VII's reign, (1901-1910) that displayed clear evidence that the mark had in fact been machine engraved. Using a hand-lens, circular marks made by a machine-driven cutting tool were clearly visible, in the base of each crown, letter and number. Authentic marks would always have been hand-punched with V-shaped dies.

The inspector's official mark has clearly been faked for financial gain, and no doubt many people spent large sums buying sets of these fake weights. The faking of inspectors' marks is illegal, even faking marks of a hundred years ago, and could result in the maker being taken to court by the Trading Standards Administration.

Taking renovation to the extreme with sand- or shot-blasting to totally remove old plating, enamelling or painting, then spraying to re-establish the original appearance, and applying new transfers (decals) can produce some stunning results. Our ex-editor reminisces about her visit to Ted Stein's house where every 20th-century trade and counter scale gleamed with maroon, ruby, turquoise or robin's egg blue enamel, every brass trim was perfectly lacquered, every glass was polished,

every pan or scoop smoothly oval and un-dented, as if every scale had just been delivered from the Chatillon, Angldile or Turnbull factory. No evidence remained of their use as the work-horses of every store, but they looked gorgeous as decorations in his house.

New member of ISASC, Jacques Boulais, specialises in such restoration; his 'before' and 'after' photographs illustrate the results that can be achieved, even on dilapidated zinc-alloy. When Jacques bought this scale, he was told by the seller that it was a VERY rare egg scale because it was made to weigh two eggs together! (Figures 7, 7a and 8).

Perhaps the greatest danger to a scale during restoration is associated with over-vigorous, abrasive cleaning and polishing, particularly where plated or chemically-induced finishes have been applied. These finishes need to be treated with extreme care because the processes involved depositing only a very thin layer of



Figure 13. *↖↗*. This scale was available at a low price because the missing disc should have been made of marble inlaid with coloured stones, a technique that nobody uses today. It was bought in the belief that a facsimile could be made.

Figure 14. *↖↗↖* A cardboard disc, with a brass sheet underneath to give it weight, was inserted. What the collector did not then know was that Mordan never used two matching discs. If one disc showed convolvulus and forget-me-nots, the other disc might show a wild rose and forget-me-nots. The moral is: *Study genuine scales thoroughly before attempting restoration!*



gilding, silvering or nickeling that is easily blemished when abraded. Natural wear-induced deterioration does not unduly offend the eye, as is clearly seen on page 3109, figure 32.⁴ Patches of gleaming 'cleaned' brass shining through aged silver, nickel or dulled gilding certainly does.

There were numerous varieties of candlestick-type scales made in Birmingham, many of which were basically brass embellished with chemically-induced 'antiqued' (brown) patination.⁴ This surface is also very thin and hence easily destroyed; any attempt at vigorous, abrasive polishing is almost certain to produce patches of gleaming yellow brass shining through the original mellow brown patination. To my mind, this completely destroys the 'eye-appeal' of a scale and surely it is the most revolting finish that one can come across.

Cleaning of these delicate plated and chemically-applied finishes is best confined to gentle washing with mild detergent, brushing with a soft brush, and finishing off with a thorough rinsing and drying.

Whatever collectors aspire to in respect of scale-renovation, they need to consider the treatment they propose to apply to genuinely ancient, and hence, almost certainly rare scales. These ancient scales are repositories of history, showing us how such implements were made and what materials were used. The weights contained within a scale-box can indicate what it was used for, and how long the scale was in active use. Information written on labels and box-lids is almost certainly not graffiti, so take great care before launching into a 'wipe-it-clean' operation. Those marks could give vital information about where the scale was made, who made it, its owner and the use to which it was put.⁵ Who remembers the horrible story of the folding gold balance, bought over the telephone because it had an exceptionally large poise (and was thus identified as a folder for the Spanish doubloon), that arrived without a paper label? When asked, the dealer cheerfully said that he had steamed off and thrown away the label, *"Because it was in Spanish, and obviously a folder for a guinea shouldn't have had a label in Spanish."*

There can be no doubt that restoring and preserving old scales and weights can give tremendous satisfaction to a collector, but care does need to be taken to ensure that valuable information is not lost forever in a uncompromising approach to the restoration process. As I have illustrated, cleaning and restoration can be taken from 'leaving well alone' to the bare minimum of cleaning, through to the ultimate finish with 'as good as new' appearance. Members will make their own decisions but careful choice of method, and the degree to which it is applied, will always pay dividends and in the long term, give members the maximum satisfaction.

Acknowledgements

With thanks to ISASC members who confessed to their various attempts to restore their scales! Their names are withheld to spare their blushes. I also thank Diana Crawforth-Hitchins for her advice and contributions.

Notes and References

1. Crawforth, M, "To Clean or Not to Clean", *EQM*, pages 1203-1210, 1234-1240 and 1265-1272.
2. Govier, K, "To Clean or Not to Clean", *EQM*, page 3035.
3. Lound, J, "Brass Beam Scales - To clean or not to clean!", *EQM*, page 3036.
4. Brass, B, *EQM* pages 3097-3109 and *EQM* pages 3127-3133.
5. Crawforth, M, "History in a Box", *EQM* pages 1067-1070.

Old Advert

This old post card is postmarked October 20, 1920 in Elkhart, Indiana. It shows a picture of the new Angdile Computing Scale Co. factory in Elkhart and pictures the front and back of their Model 303 computing scale.

Jan Berning Collection



The Nolan Scale Co., the C W Novelty Co. and Mssrs. John H Nolan and Sherman Johnson

BY JEROME KATZ

This story is not one of several players as the title may indicate. Rather it's a story made a bit complex by "too much information".

Many years ago I found my first Nolan Scale. Although I have not seen scads of them since, it is the only one I have ever seen with a paper label affixed to the underside of the letter pan. The label reads, "Gem Postal Scale/Made and Controlled by the C.W. Novelty Co/Wallingford, Conn.

In early 1991, I started my research quest and sent questionnaires about Nolan Scale Co - Boston, Mass and C.W. Novelty Co - Wallingford, Conn. to American Antiquarian Society, Boston Public Library, Massachusetts Historical Society, New Haven Colony Historical Society and Wallingford Historical Society. Over the near term I received replies from all of the above with only the New Haven Society requesting a contract for man hours at \$20 per hour to do the research.

The Questionnaire:

1. What were the earliest and latest dates given in the trade directories for Nolan Scale Co in Boston, Mass.? Start around 1889.
2. Did this company make any other products besides scales?
3. Did the Nolan Scale Co give way to a C.W. Novelty Co of Wallingford, Conn?
4. If so, when? What were the years for the C.W. Novelty Co in Wallingford, Conn?

Summary of Replies:

* American Antiquarian Society - Do not hold material for either entity. Recommended redirecting my inquiry to Boston Public Library.

* Boston Public Library - Nolan Scale Co first listed in Boston City Directory of 1889, located at 13 Bowker St. John H. Nolan (patent holder) first appears in the 1890 Directory, listed as Manager of the Nolan Scale Co, located at 96 Lincoln St. Factory located at 97 Oliver St and Nolan's home located at 32 Worcester Square. By 1891, Nolan is living at 18 Dracut St. The last reference to the Nolan Scale Co appears in the 1892 Directory. Probably before the end of 1892 Nolan was employed as an insurance agent, with an office at 95 Milk St, Rm 20 (clearly not his home but not known for whom he worked). By 1896 his home address was listed as 18 Bowdoin St. By 1902 Nolan was listed as President, Pneumatic Power Co at 30 court St, which was in business only for a few years. Nolan died in 1911. No information on the future of Nolan Scale



Figure 1. ▲▲ Nolan Scale Co. in Boston made some of the small, American candlestick postal scales. They measure almost 4" tall and the base is 2 1/2" in diameter.

Co. Recommended redirecting my inquiry to Wallingford, Conn.

- * Massachusetts Historical Society - Essentially similar data as Boston Public Library but less detail.

- * New Haven Colony Historical Society - Send money

- * Wallingford Historical Society - Found nothing on Gem Postal Scale or C. W. Novelty Co. Since this society is essentially a one-person operation, recommended redirecting my inquiry to the New Haven Society where there is staff (and in need of money)

With nothing in the way of closure to my research, the Nolan file languished. TA DA!

Two years later, 1993, and almost forgotten about, I received a letter of apology from Wallingford. It seems that while searching for a family name beginning with "N", there was "Novelty, C. W. Co" listed on that page.

Summary of Wallingford Historical Society Reply , Feb 1993:

- * Nothing before 1900; Directories for 1901/1902 missing.

- * 1903 - Novelty, C.W. Co - 47 N. Orchard St. Also listed at this address was a S. D. Johnson.

- * 1909/1910 - Novelty, C.W. Co - 47 N. Orchard St; Johnson - Watchmaker.

Home - 51 N. Orchard St

- * 1912 - Novelty Mfrs - Novelty C. W. Co -

47 N. Orchard St

Watchmakers and Repairers - Johnson, S. D.

47 N. Orchard St,

Home - 51 N. Orchard St

- * 1915/16 - Same as above

- * 1920 - Listed at 47 N. Orchard St:

Buckmaster, W. S. - Printer

Johnson, S. D. - Jeweler

Sherman & Johnson - Novelty Mfrs.

- * 1922 - Novelty Mfrs

Sherman & Johnson - 47 N. Orchard

- * 1924 - Novelty Mfrs

Sherman & Johnson - 24 William St

Watchmakers & Repairers -

Johnson, Sherman D. - 24 William St



Figure 2. This label was affixed to the underside of the letter plate of the Katz Nolan scale. The label reads, "Gem Letter Scale/Made and Controlled by the C.W. Novelty Co/Wallingford, Conn." It lists the capacity as 8 ounces and at one time attested to the patent date and bore directions to adjust the scale. It is now almost totally illegible.

Author's Observation: Is it purely curious, a Directory error, or a random and innocent occurrence that there was a Sherman Johnson and Sherman & Johnson at the same address. No answer.

Additional trivia which came out of the search. The building at 47 N. Orchard St still remains and made into a residence. In 1924, H. Crump, Printer, took over the building and it remained a print shop well into the 1970s.

I now had information but was no farther ahead in defining exactly how Nolan's Scale got to be the Gem Postal Scale and how C.W. Novelty Co got to make it.

What follows gives clue to why in my opening paragraph I refer to a story "made complex by too much information".

My contact at the Wallingford Historical Society apparently became so attached to my research saga that she went the "extra mile" to get me more information.

Summary of Wallingford Society Reply, March 1993:

* Town Clerk Records: Tracked Sherman Johnson until 1931. In 1932 Johnson is no longer listed and his home is listed as vacant. No record of death found in town.

*** Census Records:**

- * 1900 - Sherman Johnson was 53 (born in Connecticut, 1846). Married 27 years; wife Marion, one child, mother Eliza; jeweler by occupation.
- * 1910 - Address given as 51 N. Orchard St, which agrees with the city directory information given above. Now was a widower, a retail jeweler working on "own accord". Home was owned and mortgaged. Mother Eliza was in the household.

*** Town Clerk Records:**

Mother Eliza died age 94 in 1916. Wife Marion and mother Eliza buried in the same lot of 4 plots. Still no record of Sherman Johnson's death.

*** Land Records:**

Nothing on C.W. Novelty Co or its dissolution. Sherman Johnson sold his N Orchard St property in 1923 and had mortgages on Franklin St, his last address in the city directories.

By September 1932 foreclosure of mortgage was recorded, "This certifies that a mortgage from Sherman D. Johnson of Washington, D. C., formerly of the town of Wallingford, Conn. to the First National Bank of Wallingford was foreclosed". By this point Johnson was 86.

*** Newspaper:** (Meriden Record, March 7, 1905; Section on Wallingford Town News) -

Death announcement of Mrs S. Johnson of Bright's disease, aged 58. Leaves husband, Sherman D.

Johnson, well known jeweler and a son, Louis S. Johnson, a reporter for the Hartford Evening Post.

Author's Observations:

Johnson seems to be referred to as a jeweler, not as once owner of a novelty manufacturing firm. Is the reason there is no reference made of Johnson's death in his home town because he apparently went to Washington, D.C., to be with his son in that city, perhaps there as a reporter for the Hartford Evening Post?

Author's Summary:

* I learned that John Nolan was primarily an insurance agent, although he patented a postal scale and that Sherman Johnson was primarily a jeweler and each lacked any strong work or trade related evidence in the records to support that of a scale manufacturer

* I found no particular information on the Nolan Scale Co, i.e. possible other products, or a connection with Gem Postal Scale/C.W. Novelty Co

* If that label on the underside of my Nolan Scale was not there, think how straight forward my project would have been, even though issues remain unanswered. But with the information the label my research became a familiar escapade finding out considerable and curious information, not necessarily relevant to my goal.

* Maybe Sherman D. Johnson is buried not too far from where I live.

Editor's note: Jerome Katz's biography may be found on page 2122 of EQM.

John H Nolan Scales

BY JAN H BERNING

I was intrigued by the Nolan scales the first time I saw one at an ISASC convention twenty years ago and decided that one day I would like to have one in my collection. In a Vermont antique shop, several years later, I spotted a small wooden box with a label picturing a Nolan scale. It read "*Gem Letter Scale, Capacity 10 ounces, Nickel, Manufactured by the Nolan Scale Company, Boston, Mass.*" The shop-owner told me that another collector had bought the scale but didn't want the box and that it was for sale. I acquired the box and it sat empty in my collection for a number of years. Soon after I started buying on Ebay, in the late 1990s, I was able to buy a Nickel-plated Nolan scale to complete the set.

In the course of the last four years I have been in the process of working on a US patent data-base of scale patents. During this process I came across the name of patentee John H Nolan and immediately recognized the name and the drawing of the scale. However, I found that Nolan held a total of three patents for similar spring scales. This brought several questions to mind.

1. Who was John H Nolan?
2. What are the differences in the three patents?
3. Are all the known Nolan scales alike or are there differences in design and construction?
4. Did Nolan make any types of scales other than the letter scales with which I was familiar?
5. Did other boxes exist and were they identical to mine?

I was talking to Jerry Katz this year, about Nolan when he mentioned that he was working on an article about the patentee. I suggested that we work together since I was interested in the three Nolan patents. His article found on pages 3161-3163 of this issue

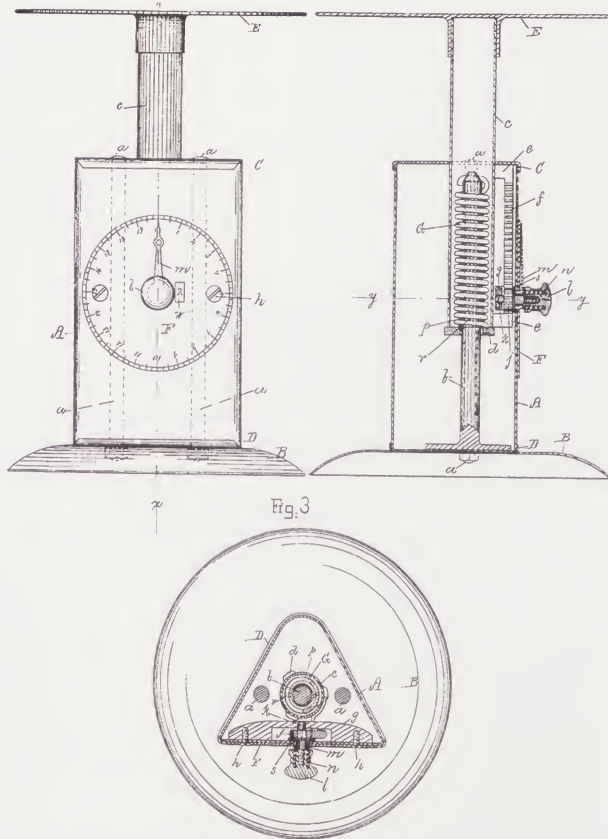


Figure 1.  Nolan's first patent no. 393,340 was for a simple spring scale fitted with a triangular casing and a flat plate. The dial shown on the patent drawing was graduated in lbs from 1 to 19. Was it produced?

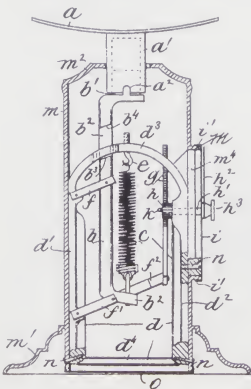
of EQM answered my first question.

Patent descriptions:

Patent 393,340 was issued on November 20, 1888. Patent 393,340 has the spring wrapped around a rod (b) that is fixed to the base. Outside the spring is a tube (c) that has the letter plate mounted on its top. The bottom of this tube (c) is attached to the bottom of the spring. When a load is applied, the tube (c) descends, stretching the spring. This is all effective, as the spring cannot escape, but is protected within the tube.

The rack and pinion that revolve the dial are motivated by the downward movement of the tube (c) because there is an arm (e) protruding out from the tube (c), and parallel with it, so that when the tube descends, the arm (e) descends equally, pulling the rack past the pinion.

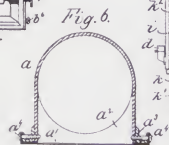
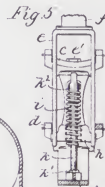
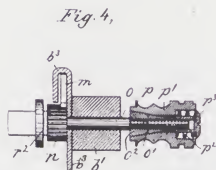
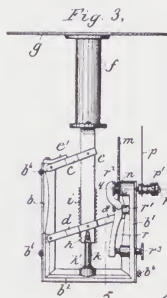
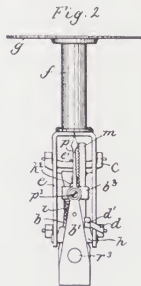
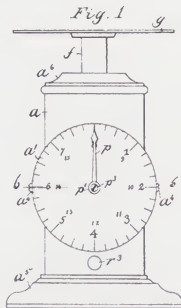
The above mechanisms are contained in an outer triangular case, but the case was not rigid enough in the opinion of the patentee and he put two vertical rods from top to bottom



No. 403,692

J. H. NOLAN
WEIGHING APPARATUS

Patented May 21 1889



Witnesses.

W. C. Hill

W. C. Hill

Figure 2. *W. C. Hill* Nolan's second patent no. 403,692 had a half-roverbal linkage. All of the Nolan dials, that the author has seen, have extended past the sides of the scale casing as shown in Fig 1. This patent also mentions a large capacity scale used for weighing various recipe ingredients. Only one Nolan scale, the family scale version, is known to have a set screw as shown in Fig 4 as well as a flat plate as shown in Fig. 1, 2, and 3.

Figure 3. *W. C. Hill* Nolan's third patent no. 403,693 also had a half-roverbal linkage. The majority of Nolan scales that exist use this patent with a slight diversion from the patent drawing. It was not unusual for manufacturers to slightly alter the way a scale was made, from the original patent drawing, as it was being manufactured.



Figure 6.  This nickel-plated Nolan has a simpler base design and smaller un-ornamented numerals. It reads Nolan Scale Co., Pat. May 1889, Boston, Mass. on all the examples. The patent date is stamped below the center.



Figure 7.  This Nolan family or recipe scale is $7\frac{1}{8}$ " tall, the base measures $5\frac{1}{4}$ " in diameter and its dial is 4" in diameter. It is graduated by $\frac{1}{2}$ ounces up to 10 pounds and the goods plate measures $5\frac{1}{8}$ " by $4\frac{1}{2}$ ".

Figure 4.  This nickel plated Nolan postal scale has a different base from the one shown in Figure 6. Note the larger numerals and the scroll designs for the numerals 4 and 6. The patent date is stamped exactly across the center. These scales measure $4\frac{1}{8}$ " in height, their base is $2\frac{1}{8}$ " in diameter and the letter plate measures 3" by $2\frac{1}{8}$ ".

Courtesy Terry Dagger.

Figure 5.  This is the brass version of the Nolan postal scale. These American candlestick scales have a capacity of 10 ounces and are graduated by $\frac{1}{8}$ ounces. This example has an identical base to that of Figure 6.

Bill Doniger collection.



Figure 8 a & b. ➤➤ These photos show the differences in the base designs of the Nolan postal scales. They also illustrate the two variations of the dial flanges.



of the case internally. As the dial shows 19 units, and Nolan writes about “two pounds of flour” we assume that the units are lbs. So 19 lbs as a load might need two strong rods as additional strengthening! Nolan even suggests that a stronger spring could be inserted, and the pointer could go round several times, with an indicator telling how many times the pointer had revolved.

Patent 403,692 (Figure 2) was issued five months later, when Nolan rejected his tube

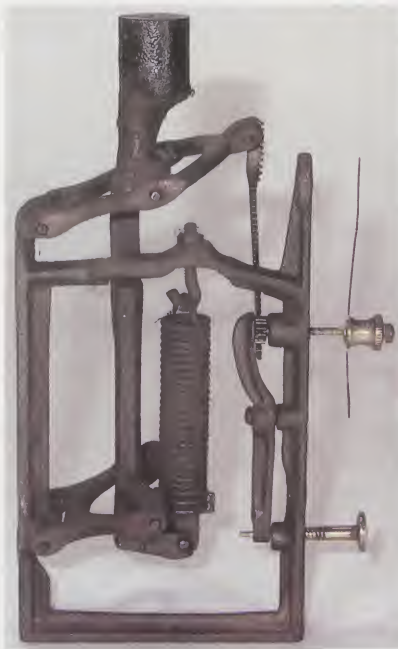
(c) which could conceivably have rubbed against the casing if a heavy load was applied off-center. Instead he used two bifurcated arms, that we call a half-roberval linkage. As the arms swing from a diagonal position to a horizontal position when the load pushes them down, their tips must move towards the dial. The load plate, the rod under it, and the bottom of the spring move laterally too. As the patent shows a rod (k) sticking up through the spring from the base, it is impossible to see why the rod (k) should not bind on the spring as it moves laterally.

The large household version (Figures 7 and 9) has a knob (r^3) below the dial, that pushes a plate onto the back of the rack and pinion. This feature is in patent 403,692 only. The dial has the interesting feature of having numbers going past zero, so that the pointer can go around, past the 7, past the zero (8) and on to 9 and 10. See Figure 13. The notch on the tube below the load-plate acts as a break

Figure 9. ⚙️ The mechanism of the cast iron Nolan family scale, shown in this photo is built with all the components shown in patent no.403,692 (Figure 2). However the arrangement of those components is slightly different from that shown in the patent.

Nolan rejected the rod coming up into the spring from the base, and relied on the strong roberval linkage to stay in alignment, pulling the spring down vertically.

Attached to the right of the mechanism is the set-screw and dial hand. The mechanism of this 10 pound capacity scale is much the same as the postal Nolans but is made from heavy cast iron.



A NEW AND USEFUL INVENTION!

SIMPLE IN CONSTRUCTION, SENSITIVELY BUILT

AND NOT LIABLE TO GET OUT OF ORDER.

THE GEM LETTER SCALE.

REGISTERED IN

NICKEL AND BRASS

AUTOMATICALLY REGISTERS THE WEIGHT

Graduated To Ounces Graduated to One-Eighth Ounces. This unique Scale is designed to meet the wants of the Counting Room, Lawyers', Doctors', and other Offices, Ladies' and Gentlemen's Writing Desks, etc., where Mail and other light articles are to be weighed. Every Scale warranted. It can easily be adjusted to a slanting desk.

DIRECTIONS.

If the Scale does not register correctly, press the Pan down and move the Hand *forward* as many points as it lacks of Zero or raise the Pan and move *backward* if need be.

MANUFACTURED BY THE
Nolan Scale Company.
EXCLUSIVELY FOR THE TRADE

Figure 10. This advertisement was found in the box containing a Nolan Gem letter scale. It gives directions for adjusting the scale. It is interesting that this advert came in the box shown in figure 14b which has the odd spelling of *nickel* for the word nickel. Two of the three boxes the author has seen had this same spelling.

No example of a mixed metal (nickel and brass) scale has been seen. So far the whole postal scale has been either entirely nickelled, or brass.

Neither have we seen one adjusted to a slanting desk. Did he envisage the load-plate set at an angle? Feet of differing lengths? A wedge under the scale?

Figure 12. This label was affixed to the underside of the lid of another Gem Letter Scale box. It shows the rates of postage that were in effect beginning in 1898.

GEM LETTER SCALE, CAPACITY 10 OZS.

DIRECTIONS FOR REGULATING IT.

The Hand should stand on zero. Should it require to be moved backward, turn the back until it is taken up and as many more points as required. Should it require moving forward, press the pan down then turn the hand forward until the scale is showing as many more points as required. The hand should stand on zero.

The thumb screw which holds the hand in position should be screwed up tight and not tampered with when moving the hand.

A copy of the above directions will be found under the scale pan.

Figure 11. The label affixed to one box lid reads as follows: **GEM LETTER SCALE, CAPACITY 10 OZ. DIRECTIONS FOR REGULATING IT.** The hand should stand on zero. Should it require to be moved backward, turn it back until -- is taken up and as

many more points required. Should it require moving first press the pan down then turn the hand forward until the slack is taken up and as many points more as --required to cause --stand on zero. The thumb screw which holds the hand on should be screwed up tight and not tampered with when moving the hand. A copy of the above directions will be found under the scale pan. No such directions have been found.

RATES OF POSTAGE

For Letters and other articles of small weight, not exceeding 10 ounces, the rate of postage is 3 cents per ounce, and 3 cents for each additional ounce, or fraction thereof. For parcels, the rate of postage is 4 cents per ounce, and 4 cents for each additional ounce, or fraction thereof. For registered mail, the rate of postage is 5 cents per ounce, and 5 cents for each additional ounce, or fraction thereof. For insured mail, the rate of postage is 6 cents per ounce, and 6 cents for each additional ounce, or fraction thereof. For express mail, the rate of postage is 7 cents per ounce, and 7 cents for each additional ounce, or fraction thereof. For money orders, the rate of postage is 8 cents per ounce, and 8 cents for each additional ounce, or fraction thereof. For telegrams, the rate of postage is 9 cents per ounce, and 9 cents for each additional ounce, or fraction thereof. For all other articles, the rate of postage is 10 cents per ounce, and 10 cents for each additional ounce, or fraction thereof.

thus preventing the pinion from revolving more than to the 10, and preventing the spring from stretching too far.

Patent 403,693 (Figure 3) was issued on the same day as the previous patent. The small letter scales owned by ISASC members are basically of this design, with the spring suspended in the centre, without any rod inside it, or tube covering it. Nolan, in these patent drawings, shows the iron frame curving right over the top of the mechanism forming a hollow box, from which to hang the weighing mechanism

But Nolan apparently rethought the roberval linkage. Instead of extending the bottom arm to pull the rack down, he left the bottom arm short, just acting as a normal half-roberval link, and instead he extended the top arm to push the rack down past the pinion.

Nolan writes in his patents about assembling the mechanism, checking it, then temporarily removing the dial and pointer, before dropping the case over and reassembling the dial and pointer. Only one scale has been disassembled for this article, my large household version, but that proved most helpful. See Figure 9. We can now see that Nolan rejected the hollow box frame, and used a U-shaped iron frame, straight across the bottom, and up the sides only.

We can also see that the roberval linkages have a hole through the centre of each arm, to allow the rod below the load-plate to descend. As the rod is attached to the arms by pins across the holes, the arms are pushed down with the rod.

How I got the Household Scales:

About two years ago we bought a collection from a former ISASC member and discovered therein a cast-iron family-type scale with a brass dial that looked vaguely familiar. Upon closer inspection, I read the tiny letters “Nolan Scale Co., Pat. May 1889, Boston, Mass.” This had to be a rarity! Now that I have done this investigation, I think it truly is rare!



Figure 13 // The Nolan Gem letter scale shown with its box and Nolan's larger cast iron family scale as a comparison of sizes. The larger scale has a capacity of 10 pounds by $\frac{1}{2}$ ounce while the letter scale has a capacity of only 10 ounces. In order to reach full capacity, both scale's hands pass the 0 and continue to the 2. The larger scale has the 8, 9, and 10 shown on the dial while none of the smaller ones show those larger increments.

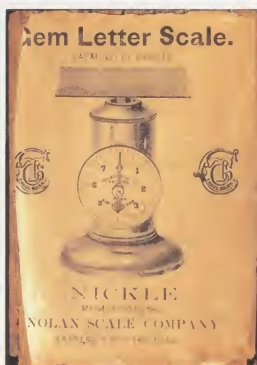
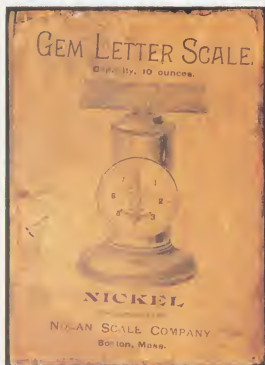
Figure 14 a & b. ➤ The view from underneath the bases of two different Nolan letter scales. The one on the right seems to be stronger and better made than the one shown on the left. Are there other mechanism designs as well?



Types, Boxes & Labels:

Some questions remain.

1. Were there other styles of Nolan scales that were made?
2. Are there other box styles?
3. Do different labels exist?
4. Is there a scale other than Jerry Katz' with a label on the bottom of its plate as stated in the advert?



Figures 15a & 15b. ➤ The small wooden, dovetailed boxes that the Gem Letter Scales came in measure $4\frac{1}{2}$ " tall by $3\frac{1}{4}$ " wide and are $3\frac{1}{8}$ " deep.

Two of the three boxes the author has seen had the same spelling of nickel. The right box bears a monogram and has the notation "expressly for the trade."

The design of the dial is different from those I have found.



Acknowledgements:

The author wishes to thank the following people for providing photos and information used in preparing this article.

Diana Crawforth-Hitchins, Terence Dagger and Phil Wehman.

Editor's note: The author's biography may be found on page 2140 of EQM.

Figure 16 ➤ The Nolan letter scale will only fit into its box when the letter plate is pushed down to compress the spring inside the casing. This causes the scale to fit tightly into the box so that the scale could not be damaged during shipment.

Bowling Ball Scale

BY CLIFFORD LUSHBOUGH

A few years ago at one of our ISASC Conventions, those in attendance were shown a quick overview of the bowling ball scale during the "Show & Tell" session. At that time many people expressed an interest in the scale's history and its operation. I may have said that I would prepare an article for EQM. The procrastination time is up. Here is part of the story of the bowling ball scale.

However, before the story some things need to be pointed out. Your first encounter with the sport of bowling involved many gutter balls and as you progressed you discovered that the ball seemed to have a mind of its own. Sometimes it went in a strait line to the pins, but other times it went in a curved line to the pins. This behavior may have lead you to believe that there was something in the inside of the ball. It was not a gremlin, but a weight block placed in the ball. The ball was and still is a sphere made up of many things. It is not homogenous, but heterogeneous. The experienced bowlers have taken advantage of this off "weightness" to improve their bowling scores.

This scale was probably invented out of necessity. During the late 1800's the sport of bowling was in a great state of confusion. The rules were different from state to state and even city to city. Tournaments and league play were difficult as bowlers would try to bend the rules by having a ball that was larger, heavier or unbalanced. Also, unusual weights were placed inside the ball. Such things as lead, mercury and steel items. These items were placed near the out side of the ball to make it hit the pins in the "strike zone" at a sharper angle. This sharper angle made it more likely for a strike to occur.

On the ninth of September 1895 the American Bowling Congress was formed and a set of rules for the sport were adopted. These rules set standards for the ball, pins and lanes. The rules governing the weight of the ball are what required an unusual scale. The rule said, "After drilling, the following tolerance is allowed in the balance of the ball. For a ball weighing 10 pounds or more (maximum 16 lb.), not more than three ounces difference between the top of the ball (finger hole side) and the bottom (solid side opposite finger holes) is allowed." Keep in mind now that the scale must determine if this ten to sixteen pound perfect, very hard sphere has a "thing" inside the ball at the top that does not weigh more than three ounces. A ball that violated the above weight rule was called a "dodo" ball. A cross section (Figure 3) of a bowling ball shows the simple weight placed in the core of the ball.

A letter obtained from the American Bowling Congress written by Mr. E. H. Baumgarten (former ABC Secretary) provides some interesting information about the "dodo" ball and scale.



Figure 1. // Standard modern plastic bowling ball with a small pin used as the weight block.

Figure 2. // Two finger hardwood ball c. late 19th century.

Courtesy Gene Beecher www.Hustontown.com.



Figure 3. // Cross section of a ball showing a simple weight block.



LETTER FROM THE AMERICAN BOWLING CONGRESS Dated at Tucson, AZ Dec. 14, 1959

Dear Mr. Wellman:

You start your letter of the 8th to me by mentioning my book, "Bowling Here's How", and wondered where you ever found one, for there were only 3300 printed in 1932, and the plates were destroyed in the Union Stockyards Fire of 1935. I was in San Francisco at the time.

But, to get to your inquiry regarding the "Do-Do ball". My first bowling was done in 1898, and I recall that the loaded, or Do-Do ball was in use at that time.

In fact, two of our smallest bowlers, Bill Lee and Gus Steele, both of them in Chicago, used balls which weighed 20 lbs. I used one weighing 22 lbs. The two "shrimps", Lee and Steele, weighed about 108 and 115 respectively. I weighed 148 at the time.

The real heavy balls were called "phonies" by those who used them, because the excess weight carried them through the 10-pin set-up and left too many odd splits. I believe, but cannot prove that the extreme[ly] heavy ball was used first, and the Do-Do was an improvement.

By 1902 or 1903 the extremely heavy ball had been discarded, but the Do-Do ball had been refined.

Some were called the 7-9 ball, and were made by cutting a 14 lb and an 18 lb ball in two, and cementing the two halves together, then drilling fingerholes, only two in those days, so that the bowler using one could roll it in such a way as to use the hook or curve to his advantage. You can be sure some became real experts.

At that time most, in fact practically all bowlers used only two finger holes, and in many cases both holes were the same size, so that the course of the ball could be reversed simply by reversing thumb and finger hole.

Some Do-Dos were so heavily weighted that only one with a real good grip and plenty of speed could keep the ball on the alley all the way to the pins. Phil Wolf, one of our very best from 1910 to about 1925 had one on the ballrack at O'Leary's Alleys on South Halsted St, just south of Root which a number of bowlers could not roll into the pins.

The real Do-Do had no more than from one to two pounds more in one half than the other. Quite a good number of the experts from 1900 to about 1915 were real slickers. Gilbert, and Franz of Cleveland may have been about the best two-man Do-Do team.

A pretty good number in Chicago used the ball. Frankly, I was one who used it for several years. The following a good one on me--- In the A.B.C. 1912 Tournament at the International Livestock Exhibition Building five-man event, I drew twelve "Do-Do" splits, converting four, I think. The "Do-do split" leave was the 1-2-10 and sometimes the 1-2-4-10. The ball just missed the headpin on the right side and cut through. The split was not very difficult but one had to be very careful about the speed in order to have it turn properly.

Several men became expert at trying to circumvent the rule prohibiting the use of the ball. The rule prohibiting its use was adopted at the 1913 Convention, and became effective with the 1914 tournament.

I am fearful to mention names because there may be a possibility that some son or grandson might sue me, were I to intimate their forbears were crooks or chislers. But I can tell you while a considerable number of bowlers in the Chicago, Cleveland, Syracuse and Rochester areas used, or attempted to use what we called the "Crook Ball". The majority of those participating in our A.B.C. Tournaments concurred in the prohibition.

One man, Louis Levine of Chicago, now deceased, was an expert. Gave the Do-do up, but then learned to hook an evenly balanced ball so well that he was often accused of using a loaded ball. I know he did not, for I checked his ball at City and State tournaments many times, and always found it in balance.

Even during my early years as Secretary of the A.B.C. I was often called in to the paddock to decide whether a ball was in balance, without a load. And on a number of occasions had the ball sawed in two despite the threat to sue me. But in each case we found a load.

One was a dentist who had used a flexible shaft to bore a hole in his thumb-hole in such a way as to get the lead out in front of the thumb-hole. He threatened suit, but didn't go to court after we found the load. He did not bowl in that tournament, either.

We first used a balance scale devised and patented by a Mr. Troemner of Philadelphia, I'd Guess about 1920. It required some calculating and moving of the balance weight, but did the job in very good shape. We used a pencil flashlight, and of course some psychology, and sometimes just got tough with those who we knew used the "phony" balls in match games.

Now, since we have the newly perfected Toledo gross weight and balance scale which enables a ball weigher to just put the ball in the cradle and read weight and balance, we have very little trouble.

One last one---At our last Buffalo tournament in 1946 a bowler from a suburb of Buffalo had the "guts" to bring a ball weighing 22 lbs into the paddock, most certainly with the thought he'd get through. HE DID NOT!! We took his ball away- and still have it. He too, threatened suit, but never started.

He had trouble in realizing he was cheating his friends at the alley where he bowled his league and pot games. If he won very often he had to keep that ball thin on the right hand side. Otherwise he would see plenty of 7-10s and Big Fours.

Hope you can get something out of the foregoing. I'm tired.

Yours truly, E. H. Baumgarten.

Still further, after having the notes all sealed--Overlooked telling about two experiences in the same Illinois State Bowling tournament at Chicago, 29 W. Randolph St, on the famous Randolph Alleys, fourth floor, where the very best bowling league in the country from 1910 to 1940 bowled its schedule.

One Sunday Morning, when I was supervising the doubles event a bowler from Southwest Chicago was bowling doubles with another, was suspected of using an illegal ball. The ball had been weighed and passed. They were in their second game when we heard what sounded like a real hailstorm. It was! The buckshot which the bowler had put into one of the finger holes flew all over the place as the cork came out. The pinboy thought he had been shot!

A few scales have been found that were able to detect the “dodo” ball. The first one is by patent only. The Patent # 1,099,917 issued June 16, 1914 (Figure 4) and named the Sphere Testing Device. Other scales may have been used at this time, but none have been located. A drawing from the patent shows the general structure of the scale. The beam had a hanging weight pan that could accept small slotted weights on both ends. The beam was attached to a half circle metal strap(4). Both ends of the strap rested on the posts (7) with V bearings (9). The ball was placed in the half circle with the heavy portion of the ball up. You are probably saying “well that is what this scale was supposed to do”. The scale was to tell the weight of the top load not where the load is.

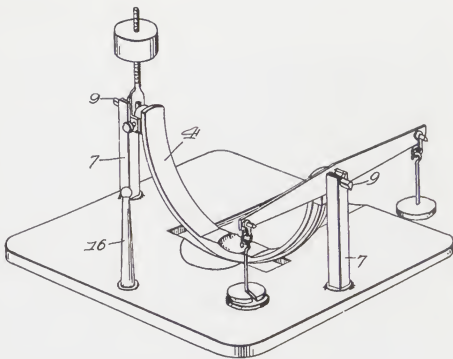


Figure 4. Drawing from patent no. 1,099,917 of the 1914 do-do scale.

The determination of this top load is quite interesting. The patent suggests that the ball be floated in mercury. (not likely today) The heavy part of the ball would be down. A mark would be made at the opposite side. Another method would be to place the ball over a high pressure air jet. With the proper pressure the heavy part of the ball would be down. One would now know that the top weight is exactly opposite the mark.

Now back to the scale operation. With the heavy weight up, some adjustment of the ball position would have been necessary to get the beam level. With this accomplished the ball would have been rotated exactly 90 degrees toward the post (16). Now the top weight would be on the left side of the scale. Slotted weights could now be placed on the hanging weight pan to bring the beam back to level. To verify the top weight the ball could be rotated 180 degrees and rebalance the beam. The top weight at 90 degrees and 180 degrees would be the same. This would seem to be the procedure for determining if the ball was really a “do do” ball.

The modern bowling ball scale is much different. A Henry Troemner Scales and Weights catalog #1926 included a Bowling Ball Test Scale (Figure 5). This is probably the scale that is mentioned in the Baumgarten letter. It has a ring that holds the ball firmly and a double beam with riders. The design has not changed a great deal over the years. Pictures of slightly different scales have been found in Pro-Shops, ISASC members collections, and the internet (Figures 6, 7, 8, 9). At the present time American Machine and Foundry (AMF) and Kaufman Mfg. Co. still manufacture the “dodo” ball scale. Many searches have been made in the patent listings and conversations with the manufacturers and no patents have been found or acknowledged. This type of scale is a valuable tool for all of the Pro shops as indicated by the price of a new one (over \$1000).



Figure 5. Ball scale from the 1926 Henry Troemner catalog.

The operation of this scale is easier to operate and a higher degree of accuracy. The ball is placed in the ring with the weight block up. It is not necessary for the ball to take the mercury bath because the manufacturer put a small dot directly above the weight block. The determination of where and the marking of the ball seems to be somewhat of a secret. Probably because it may be proprietary information. It seems that the ball is placed in a cylinder just slightly larger in diameter than the ball. A jet of high pressure air is introduced below the ball and the ball will float. The heavy part of the ball will drop to the bottom. The air is turned off and the ball drops and a sharp pin marks the spot. This is where the weight block should be. However, the less expensive balls may not locate the weight block accurately. The bowling ball used has a bowling pin inside the ball. (not unlike some of the weight blocks used today in bowling balls. It's just that you can not see them) The ball is placed in the ring and the ball's weight is determined. The figure(10) shows the pin upside down (the heavy part up) and the ball's weight is 15 pounds 7 ounces. the slotted weights are equivalent to 15 pounds and the 7 ounces is



Figure 6. ⚡⚡ Troemner Scale Manufactured by Kaufman.

Figure 7. ⚡⚡ Troemner Scale Manufactured by AMF. Newer than Figure 6.



Figure 8. ⚡⚡ Kaufman design with tubular beam Manufactured by AMF.

Figure 9. ⚡⚡ Probably Kaufman newer base with tubular beams.



indicated on the back beam. This ball has no thumb and finger holes. Holes drilled in the ball require other rules and this will be left to the pro shop operators. The front beam shows a zero reading (Figure 11).

The next figure (12) shows the ball rotated 90 degrees toward the fulcrum. The weight block is now to the right of center. The front beam rider has been moved 1 ounce to the left to compensate for the center of gravity change (Figure 13). The weight of the ball remains the same.

With the ball rotated another 90 degrees (Figure 14) the center of gravity is on the vertical line and the front scale rider is back to zero (Figure 15). If the ball is rotated another 90 degrees clockwise the center of gravity would now be left of center and the front scale rider would have to be moved to the right one ounce. If it is not one ounce, then the weight block mark is incorrect. Further weight measurements would have to be made to locate the real center of gravity.



Figure 10. Kaufman design Mfg AMF with weight block up.



Figure 11. Front beam zero reading.



Figure 12. Weight block on the right.

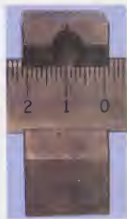


Figure 13. Front beam one ounce.



Figure 14. Weight block down.



Figure 15. Front beam back to zero.

Other positions could be used, but hopefully the operation of the scale shows how a scale was able to identify the DODO ball!!

Recently while searching for other patent items a Patent no. 4407154 "Bowling Ball Weighing and Balance Device" date Oct. 4, 1983 was found (Figure 16). A picture of this patent was shown to an employee of a bowling lanes and he indicated that he had one of these in his home somewhere and had used it in his pro shop some time ago. You see the bowling ball scale (True Balance Scale) with a ball placed in it (Figure 17). The ball has been placed in the scale with the top weight on the far right of the ring. The pointer shows that it has a heavy top weight. The amount of the top weight would be determine by placing the slotted weights

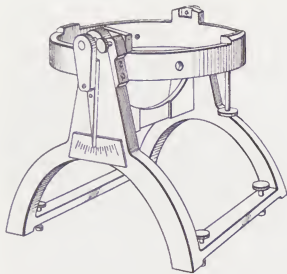


Figure 16. Drawing from patent no. 4,407,154 for the True Balance Scale.

on the left side holder. Both the indicator and the weights would determine the off balance. The scale is operated much the same way as the above scales. It does not determine the actual weight of the ball. The scale was not produced in great quantity. Probably not more than 200-300 scales as mentioned by an employee of Jayhawk Bowling Supply. It did not “catch on” for some reason and the AMF and Kaufman scales are still used by most pro shops.

Another bowling ball scale (AMF Accu Balance) appeared recently on e-Bay that is a modern design of the 1926 Troemner model (Figure 18). Pictures of this scale are shown. The slotted weights have been replaced with metal cylinders that are hung on the beam (Figures 19 & 20). It appears to be operated in the same way as the previous double beam balances. The seller indicated that the scale was purchased about five years ago. Contact with AMF provided no further information about patents, etc.

The descriptions of the various “dodo” ball scales shows that the weight and balance of the ball is very important to the sport of bowling. Research continues to try to improve a person’s ability to score the Big 300. Many factors have not been discussed here but are important; such as, lane oil, lane surface, ball surface, ball core, and bowling pin. The simplest thing that can be said about the bowling ball is that when you release the ball from your hand and it starts down the lane it will slow down and the TOP WEIGHT will take over and it goes where it wants to go. You really know that it’s going to curve and there’s not a darn thing you can do about it.

At this point in the research no further information about the early manufacturing and current production of the “dodo” scale has been found. The reason for not providing that information is unknown. It is hoped, however, that the information provided has given you a little hint as to why that bowling ball just doesn’t want to roll in a straight line.



Figure 17. True Balance scale with undrilled ball.

Figure 18. ➡ Modern Kaufman Mfg AMF.



Figure 19. << Weights on the beam.



Figure 20. ➡ Slots for weights on the base of the scale.



Acknowledgments & Notes

The author would like to thank the many people and organizations that provided the scales, photographs and patents for this article. Namely, A & B Bowling Equipment, Gene Beecher (www.hustontown.com), Jan Berning (ISASC), James Dietrich (ISASC), Heatheridge Bowl, Ray Kurtz (employee at Bowl Aurora), Paul Nichols (manager of Bowl Aurora), and Jerry Schneider (Media Relations for United States Bowling Congress formally the ABC).

The Baumgarten letter mentioned a Troemner scale and a Toledo scale. However, it is not known if he was referring to the same scale or a different one. No connection has been found between the two companies.

It was very difficult to trace the exact history of the bowling ball scale because no patents have been found and the real manufacturer of the early scales remains a mystery.

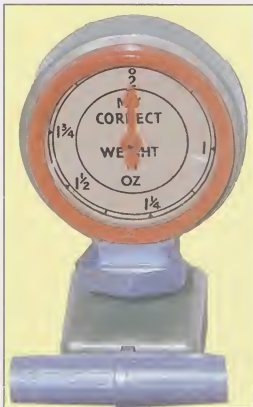
The actual drilling of the thumb and finger holes to keep within the ABC rules is an art in itself. The physics of this side weighted sphere has been studied in great detail all in an effort to get an advantage on the "other bowler". In no way was an attempt made in this article to discuss these techniques.

Some web sites that may be of interest:

www.jayhawkbowling.com/proshop.html Go to Tips
www.bowl.com
www.tcnpinbowling.org
www.bowlingmuseum.com
www.Hustontown.com

Showcase

This budgie or parakeet scale measures 3" tall. It is made of plastic and has a capacity of 2 oz. The bird could sit and eat while being weighed. It is Made in Gr. Britain and Regd No 879903. Phil Wehman Collection.



Notes & Queries

MICHAEL ROBINSON

N & Q No. 152 - 154

N & Q No. 152 Figure 1. ➤ Although this brass circular spring balance letter scale has all the attributes of Salter manufacturer; it is in fact anon. The left hand graduations are in tolas while the right hand graduations are in ounces(avoir). Is this the only recorded example?

N & Q No. 153 Figure 2. ➤ Can any member help with further information on two recently aquired weights?

1. A brass bell weight 3 oz Avoir with 19.11.44 stamped in to the base. It has no arrow indicating a Government department, so why 3 oz?

2. The 10 oz brass stack weight below is NOT solid as it is lead-filled, having been spun over on the base: over zealous polishing on the base, reveals a small area of lead.

It measures about 6 cm (2½") in diameter

- What does SUPPER FLAT mean?
- Why SOLID when not?
- Definitely postal not trade?



N & Q No. 154 Michael further writes that he has found a cast iron flat iron, for use on Victorian mop caps, that was signed by his ancestors Sandford and Yates who were involved in the iron trade in Rotherham, Yorkshire. He would have expected the foundry business to have made iron weights. Have any members come across any weights marked with the Sandford and Yates partnership name or individual names or initials?

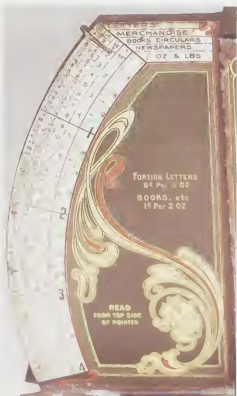


Showcase

The Reid Postal Scale is a spring scale with a very art-deco design. It measures 6½" tall 5⅞" wide and 2½" deep. Its letter plate measures 3½" by 2½". Also written on front next to the dial of this uncommon letter scale is *Foreign Letters 5¢ per ½ oz., Books, etc. 1¢ per 2 oz. and Read from top side of pointer.* It has a four pound capacity and computes postage by oz and pounds.



The dial of the Reid Postal scale has graduated columns for letters, merchandise, books, circulars and newspapers. It shows postal rates in effect from 1885 to 1916 and again from 1919 to 1931.



The back of the Reid Postal scale shown here on the right is more ornate than the front. It reads *made by AB Reid & Co Chicago, USA. Behind the graduated arc it reads Patented at home and abroad, and Warrented Accurate. To date no patent has been located.*



Bill Doniger & Jan Berning collections.

Our Salute to Thaddeus Fairbanks

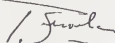
on the 175th Anniversary of His Invention of the Platform Scale

It was a busy summer here in Vermont for folks with an interest in the history of Fairbanks Scales. The 175th Anniversary of Thaddeus Fairbanks Invention of the Platform Scale provided the perfect opportunity to share the story of the Fairbanks Brothers and their Scale Works.

With the help of the Vermont Historical Society, the Fairbanks Museum, the International Society of Antique Scale Collectors and a group of friends from near and far, we were able to stage two wonderful presentations during the summer. Our display was typical of those held during the second half of the 19th century at state fairs and county agricultural shows to promote the new idea of using scales to sell commodities based upon weight rather than the old way of selling based on volume.

While a lot of time and hard work went into the creation and execution of the presentations, I think everyone enjoyed the experience and the new friendships that were born during our "ordeal". I want to give special recognition to all those who helped unload, set-up, staff, breakdown and reload the displays. The brave folks who assisted at the events were: Steve Beare, Pete Dayotas, Dave Farnham, Stu Haas, Donna Paige, Mary Simpson, Larry Violette and Alan Yale, without their efforts the presentations would not have been a success!

I hope you will enjoy this collection of pictures taken by the folks who helped to make these historical reenactments possible.



H. Brooke Paige



"Team Thaddeus" Members (standing): Alan Yale, Steve Beare, Mary Simpson, Donna Paige and Stu Haas, (seated): Larry Violette, Brooke Paige, Pete Dayotas and Dave Farnham. [pc]

The Vermont Historical Society 6th Annual Vermont History Expo June 25th & 26th, 2005

Our presentation attracted just about every visitor to the Expo. The "Team Thaddeus" members fielded a wide variety of questions on the Fairbanks Company and scales in general. Sandy Levesque and the Vermont Historical Society produced an outstanding event with attendance of over 6,000. Our display was the hit of the show, "Thaddeus" was the featured "lead" for the Expo story on both the 6 & 11 o'clock news on channel 3 WCAX in Burlington VT.



(fp)



Visitors gather to hear Thaddeus speak. (fp)



Thaddeus weighs the visitors. (fp)



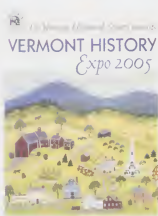
Everyone wanted to get on the scales! (fp)



Donna & Brooke at Lucy & Thaddeus. (fp)



Alvin discusses engravings with Brooke. (fp)



Thaddeus discusses St. Johnsbury history. (fp)



Team members chat with Expo visitors. (fp)



Alvin discusses engravings with Brooke. (fp)



Alvin discusses engravings with Brooke. (fp)



Alvin discusses engravings with Brooke. (fp)



Alvin discusses engravings with Brooke. (fp)



Alvin discusses engravings with Brooke. (fp)



Alvin discusses engravings with Brooke. (fp)



Alvin discusses engravings with Brooke. (fp)



Alvin discusses engravings with Brooke. (fp)



Alvin discusses engravings with Brooke. (fp)

The 30th Annual Fairbanks Museum Fall Festival of Traditional Crafts

September 17th, 2005

What a treat to hold our presentation in the hometown of Fairbanks Scales, at the Museum founded by the Fairbanks family, on the front lawn of the Church built by the Fairbanks brothers! The Museum and Peggy Pearl, the History Curator, were wonderful host and their volunteers were welcome additional help in setting up and breaking down our exhibit. Many of our visitors were current and former Fairbanks employees and it was wonderful to share the history of the company with them.



(b,p)



Kids put loved jumping on the big scales. (a)



A "dispute" over accuracy! (a)



Stu keeps a visitors weight a secret! (b,p)



A whole family "weights in" (a)



Visitors enjoy our shady location. (a)



Alan poses for a portrait. (b,f)



Demonstrating how to work the scale. (b)



Small Fairbanks scales on display (b)



The big scales attracted lots of attention. (a)



Donna looks over the inside display (a)



Our small scale display (b)



Visitors give our display the "once over" (c)



Dave discusses scales with a visitor (b,p)

Setting the Stage for Our Fairbanks Presentations

While most of the behind the scene activities went unrecorded. These photos give a glimpse into the efforts that made our Fairbanks presentations possible.



Donna works on the big scale frame. (fb)



Setting up the tent frame. (fb)



Donna and Phil level the tent. (fb)



Timothy on the steel beam and. (fb)



Unloading the big scales in a big pile. (fb)



Look out below! (fb)



Phil Ketchum lifts up a big stall. (fb)



Tommy (Timothy) has cut the big bag place. (fb)



We and Alan design the big scale. (fb)



A moment for Don. (fb)



Larry and Stu escape the hotel hunt! (fb)



Carroll and Donnie with Dave's Motor, Inc. (fb)



Donna gets open her 'Mystery' box. (fb)



Fairbanks has 'Mystery' (Mystery) box. (fb)



Mary poses with her new 'Thaddeus' print. (fb)



A local politician adjusts the weight. (fb)



A barrel hangs from the Fairbanks Scale. (fb)



Fairbanks' Counter (Tent) & Green Mountain Scale. (fb)



Early Fairbanks 'Patent' Scale - 1890. (fb)



Everyone loved looking at the scales. (fb)

I wish to acknowledge those individuals who helped to make our presentations possible:

Steve Beare, Wilmington DE - ISASC [sb]
 Steve Bronstein, Marshfield VT - Blackthorne Forge
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 [] - Photo Credits



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PAGES 3181- 3208



Cover Picture

This bilateral postal scale is marked OEST P 1766 ung P16742 DRP 112.860, 121.631. It was listed in Ph J Maul's 1909 catalog, has a capacity of 20 grams on the bottom scale and of 100 grams on the top scale. The base is made of glazed and hand painted porcelain. The scale is 6 5/8" tall and has a 4 1/4" diameter base.

Private Collection

To learn more about bilateral postal scales see André Sol's article on pages 3190-3195.

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Perry's Sample & Book Post Scale

BY JENNY HUTCHINSON

A prospective purchaser browsing through the pages of James Perry and Company's 1871 illustrated price guide¹ in search of postal scales would certainly have had a wide selection before him.

This being the case, he might be forgiven for missing the small item tucked in at the end of the section on page 87 (Figure 1). It bears no illustration, and it almost looks like an afterthought, pushed in as a page-filler, hidden away as if it is overawed by the gleaming splendour of the brass scales around it. This is Perry's "Iron Balance" designed "*for sample and book post.*" It is made in two capacities, 8 oz and 4 lb, which retailed at 7s 6d and 15s respectively.

FOR SAMPLE AND BOOK POST.					
8 oz. Iron Balance, Hard Wood	}	7	6		
Stand					
4 lbs. do. do do				15	0

Figure 1. Perry Catalogue 1871.

Figure 2. Perry catalogue 1871. The largest weight is for 8oz - 3D. Postage rates for 1871-1897. The plaque is stamped PERRY & C^o LONDON.

It cost the same as an STS roberoval of the same capacity. Why would a customer buy a black roberoval when he could buy a bright brass roberoval? The fashion for black was initiated by Queen Victoria after Prince Albert's death in 1861.

Compare this with the example in Figure 5.

J Hutchinson collection



Figure 3. The weights from Jenny's 'iron' scale. The rates were for 1871-1897.





Figure 4. ▲▲ Both the scale in figure 2 and in Figure 5 have this plaque screwed to the base.

Compare the two photographs of Perry's iron balance for sample and book post; they would appear to be examples of the two sizes of the balance. (See figures 2 and 5.)

However, a closer investigation reveals the smaller scale's little secret; it is not made of iron at all, but of brass painted to look like iron - a sheep in wolf's clothing! It is not easy to find a convincing reason for this; had it all been cast, it might have been tempting to think that, as brass has a lower melting point than iron, Perry's found it easier to cast the balance in brass rather than iron, perhaps having lost access to the iron foundry where their work was done. However, only the weight pan is cast, so the mystery is unresolved. It's just an interesting, amusing sidelight on a rather unusual little scale.

James Perry and Company

James Perry, who started the company that bore his name, was born in Banbury, Oxfordshire, in 1769, and began his working life as a schoolmaster. He was unimpressed with the standard of steel pens at the time; although metal pens had been in use for many years. Their rigidity made them very unpopular, and quill pens were far more common, despite the amount of time consumed in making and repairing them.



Figure 6. ▲▲ Perry Catalogue 1871. *Pocket Letter Balance*. This very neat Metal Balance is so small that it can be carried in the waistcoat [vest] pocket. For English or French Postage. White Metal [German Silver] 8s per dozen. Gilt Metal 12s per dozen. 1 oz capacity. Pendulum scale made by Narcissé Briais of Paris for Perry & Co.

Perry began making his own steel pens, by hand, in Manchester in 1819, and continued to do so at 37, Red Lion Square, London, in 1824, when he was joined by his brother Stephen,² thus forming the first Perry and Company. James Perry devised the idea of making the pens more flexible by slitting the sides of the nib, although he did not patent his invention, "The Perryian Pen," until 1830.

From 1829, Perry's pens were made by Josiah Mason (1795-1881), who had begun making pen nibs in 1827 at his factory in Lancaster Street, Birmingham. Apparently Mason saw some pens made by Perry's in a shop in Bull Street, Birmingham, and, convinced that he could improve the design,



Figure 5. ▲▲ This example of the iron scale is larger than the previous example, having a hole for a weight of 16 oz. This example is iron.

Collection Diana Crawforth-Hitchins



Figure 7. ▲▲ Perry catalogue 1871, *Perry & Co's Pocket Balance*, English or French Weights, 4s per dozen. Pendulum scale stamped PERRY & CO, LONDON. 0 - 4D. Made in England to Nathaniel Hall's patent of 1863. Although larger and easier to read than the Briais, it was only one-third of the price of a Briais pocket letter balance.

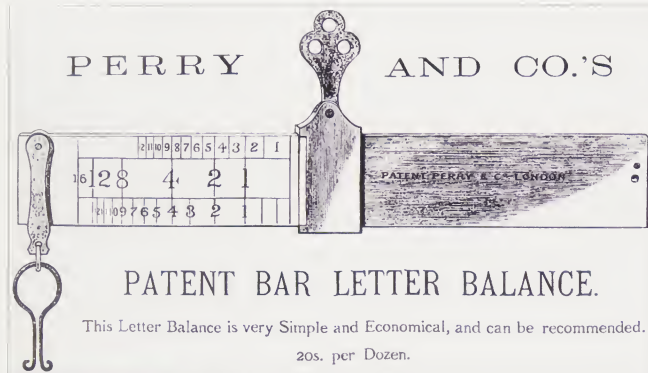


Figure 8. Perry catalogue 1871. The middle row of units indicate ounces. The bottom row shows British postal rates. The top row is probably tolas, for use in the British parts of India. No patent has been found.

Only one example known. About 8 ins. (200mm) long, ruggedly made of brass. It is a bismar, having a saddle through which the beam slides. (Bismar is a term used by scale collectors, but was not used by the trade, which possibly accounts for their naming it the "Bar Letter Balance".)

This Letter Balance is very Simple and Economical, and can be recommended.
20s. per Dozen.



bought one, took it home, and sent three of his improved pens to James Perry, who was so impressed that he travelled to Birmingham and contracted Mason to make his pens for the next 46 years.³ In 1870, three Birmingham-based pen-makers, Mason, Sommerville and Wiley, merged with Perry's under the Perry name,⁴ and it is this company which produced the 1871 price guide already mentioned.

In 1871 Perry's were still at 37, Red Lion Square, Holborn, London, where they were listed from 1831 - 1877. They also had premises at four other London addresses:

3 Cheapside, from 1860-1896

1 Drake Street, from 1864-1870

355 Strand, in 1871

19 & 20 Holborn Viaduct, from 1878-1896

They branched out into Europe with depots at Rue du Musee, Brussels and Kalverstraat, Amsterdam.

Figure 9. Perry catalogue 1872. *Perry & Co's Improved Letter Balance. This superior made Balance recommends itself for its accuracy, compactness, and non-liability to get out of repair. Packed in Paper Boxes of half-a-dozen each, with Advertisement label on the inside. Price 8s per dozen.*

Note that the letter clip curls backwards so that the letter hangs behind the scale. If the letter was in front, the user would be unable to read the graduations, as the face is only 2 1/4 (70mm) inches long. Made by G Salter in Birmingham.



Figure 10. Perry catalogue 1871, *Adjusting Letter Balance, 4 oz 5s 8d. 2 oz Lacquered on Walnut Stand, with Glass Ink and Pen Rack 4s 3d. Half-roberval and steelyard. Made by N Briais of Paris, and available, marked NB, in various sizes.*

Figure 11.  Perry Catalogue 1871 4 oz Moulded, 4 oz Best Quality on Plain Stand 5s 4d, on Moulded [bow front] Stand 6s 2d. 8 oz Best Quality on Plain Stand 7s 9d, on Moulded Stand 8s 6d. 10 oz Best Quality on Plain Stand 12s, on Moulded Stand 13s. 2 lbs Best Quality on Plain Stand 18s, 4 lbs on Plain Stand 25s.

The beam of this scale is stamped on the rear STS [Samuel Turner Senior of Birmingham], as well as being stamped PERRY & Co LONDON on the front. This is the version with the plain base.



Figure 12.  Perry Catalogue 1871. Letter Weights, round, 12s per dozen. Andrew Smith of Mauchline in Scotland patented this tiny wooden bismar in 1862. He made undecorated plain wood versions, and tartan versions with various tartans. The letter was trapped between the cords by a bead.



Perry's sold a wide range of scales, none made by themselves, as far as can be ascertained:

1. Pocket letter balances (Narcissé Briais' pendulum scales, Figure 6),
2. Pocket letter balance (Hall's patent of 1863, Figure 7),
3. Patent bar letter balances, (bar bismar of very dubious engineering principles, Figure 8),
4. Improved letter balances (a Salter flat-faced spring balance with a double hook for the letter, Figure 9),
5. Adjusting letter balances (Narcissé Briais' half-roberval and steelyard on an ebony base, Figure 10),
6. 4 oz moulded (STS roberval on a bow-fronted walnut base, Figure 11),
7. Steelyards, plain, engraved or gilt, 4oz or 8oz (for letters, but design unspecified),

8. Mauchline Letter weights' (presumably Andrew Smith's patent letter bismar of 1862, Figure 12),

9. Counterfeit Coin Detectors (Rockers for checking sovereigns and half-sovereigns),

Perry's sold, probably a year or so later than the catalogue was printed, half-robervals and steelyards to Samuel Turner's patent (in reality G Laughton's patent of 1871, Figure 14).

Figure 13.  Perry Catalogue 1871. This is one of the advertisements at the back of Perry's catalogue. Four makers advertised balances: John S Downing of Crown Works, 104 Irving St, George Dowler of Plume Works, George Salter and S Turner, all of Birmingham

The pocket balance was a folding sovereign balance. Samuel Turner is not known to have made folding gold balances, but W & T Avery, also in Birmingham, made them for sovereigns and for doubloons, so we assume that Turner (STS) bought in as needed.

S. TURNER, INVENTOR OF THE **SKELETON LETTER BALANCE.**

Steelyard Balances, Inkstands, Pen Racks, and various Stationers' Articles; Magnifying Glasses; and all kinds of correct Foreign Weights, with Balances suitable for *France, Germany, Spain, Russia, India, &c., &c.* Also a correct Pocket Balance, for weighing the English Sovereign or Half-Sovereign, Spanish Doubloons and Half-Doubloons, requiring no weights—never gets out of order—with Instructions in Spanish. Also every description of Fancy Call Bells, new designs and movements, in various colours.

MANUFACTORY:—
71, LIONEL STREET, BIRMINGHAM.

In addition to the above scales, they produced an impressive range of stationery and also a varied selection of other items, including:

"ink stands, match cases, aromatic elastic bands, metallic books, paper binders, Bostonite Tablets, pencils, chess boards, clockwork mice, copying presses, cricket balls, key chains, scissors, Talismanic Strops, bougie stands, call bells, india rubber canaries, babies' feeding bottles, clothes pegs, counterfeit coin detectors, electroplated articles, desk desideratum, footballs, grease extractors, knot puzzles, magnetic machines, perfumigators, postage stamp dampers, quill pen-making machines, razors, Manchline wares"

In short, Perry was a very successful company, offering a huge range of smallish objects for the home and small office. They gathered under one roof a selection of modern, inexpensive objects for Londoners with some spare money to spend on a variety of objects, many of which were desirable, though not strictly essential.



Figure 14.  This half-roberval and steelyard is not in the catalogue of 1871, although the patent was taken out by G Laughton in 1871. Examples have been seen stamped PERRY & Co LONDON. It was made by Samuel Turner Senior in Birmingham.



By looking at this one London retailer, we are given an oblique sight of the inter-connections between various makers in Birmingham, each of whom supplied a different type of scale to his competitors to supplement their ranges. Companies like Perry's must have had a detailed knowledge of this network in order to buy advantageously. An analysis of their 1871 catalogue has identified these makers:

G Salter	G Dowler
N Briais	W & T Avery
N Hall	J S Downing
S Turner Senior	A Smith

and hints at one other, unidentified maker - the one who made the iron roberval that started this study!

Acknowledgements

Diana Crawford-Hitchins supplied all the photographs other than those of my own scale; her help with this article, including the captions to the photos, has been unstinting and invaluable.

Notes & References

1. Perry's produced a monthly Illustrated Price Guide that was far beyond a mere catalogue. ISASC reprinted one issue of 1871,

Figure 15.  Patent by Hiscock of 1882. He patented the buffer that takes the impact of the long arm and poise as they swing down and to the left. Although made by Marion & Co, it was marketed by several retailers, including Perry & Co.

The capacity of this example (not the example seen with Perry's name on it) has a capacity of 7 lbs for 1s. This dates it to the period 1883 to 1886. This is the only truly substantial postal scale retailed by Perry, capable of weighing parcels.

(vol. 4, number 43), illustrating the rich mix of international and British news, patent applications, a catalogue of their products, and, at the back, 31 pages of wonderful advertisements, almost exclusively by manufacturers of goods that Perry sold. No equivalent magazine, published by any other wholesaler, is known.

2. James Perry died without issue in 1843, and his brother, Stephen, was succeeded by his sons John and Lewis.

3. Information from Birmingham Pen Trade Heritage Association

4. Ibid

5. The term "weight" was regularly used to mean scales. We find this confusing, but until about 1860 it was not uncommon.

6. They were not in competition with Waterlow's, (see EQM pages 2998-3006) who supplied offices with legal stationery, sturdy copiers, and substantial scales.

Author's Biography may be found on page 2933 of EQM.

Notes & Queries

BARBARA GRYGUTIS

N & Q No. 155

I am hoping you might know something about this scale. I had not seen one before. It looks somewhat new, but I really don't know when they stopped making egg scales.

ANSWER FROM JOHN KNIGHTS

Your Weighmaster scale was made in the UK. Eggs are very complicated things in UK, especially since we got into the EU (European Union).

Originally we had: Large (not less than 2 oz 3 dr), Standard (less than 2 oz 3 dr but not less than 1 oz 14 dr), Medium (less than 1 oz 14 dr but not less than 1 oz 10 dr), Small (less than 1 oz 10 dr but not less than 1 oz 8 dr). I think there were also extra large and extra small to cover those outside the grades.

In the 1980s we got the European Economic Community (EEC) system of numbered grades. 1 to 6 covered eggs from 75g to 45g by 5g intervals.

Grade 0 covered eggs over 75g and 7 eggs less than 45g. Thus there were 8 grades in all. This system lasted 10 years or so but was not popular as the difference in grades was too small and it was too complicated.

In 1997 we got the present system, XLarge (>73g), Large(63g -73g), Medium(53g -63g), Small(<53g).

We (inspectors) used to test and verify egg graders up until the late 70s which was a complex and interesting job. Popping poises into rapidly rotating grade cups required the dexterity of a concert pianist and would probably be contrary to modern Health & Safety requirements.

FROM THOMAS ALLGEIER: I have obtained a copy of the relevant section of the 1965 Eichordnung (EO), this is a byelaw governing the legal (trade) metrology in Germany. In this, eggs are graded by weight, in 8 classes from 40 to 70 grams, each being 5 grams wide. Egg-graders were checked against test eggs, which are colour-coded test weights again conforming to the EO.

This was before any EU involvement, and I expect it had been like this virtually from the beginning of time (counting from when eggs were first graded).

Can any member give more information?



Photograph courtesy of Jacky and Huub, The Netherlands.

Collecting Letter Scales, How I Got Started

BY ANDRÉ SOL

I was a collector very early, at the age of three. The empty cardboard cigar boxes I got from my uncle Gerrit, a passionate smoker of cigars, formed my first collection. According to the notes in the diary of my deceased mother, I also collected colorful advertising brochures and picture postcards. My mother tamed these collections every now and then by visiting my cupboard with the dustbin. Years later I also read this in her diary notes. One day I took off all the sides of the cigar boxes to make beautiful flat pieces of cardboard. They were ideal to throw through the air from the balcony at the first floor of our apartment in Amsterdam. My mother did not appreciate this at all. My collection was immediately expelled to – yes indeed – the dustbin. During my primary school years I collected postal stamps, cigar bands, and sugar packets. Later, somewhere during my secondary school years, I started to collect pins as well. The collecting activities were stopped later for several decades. I still have the postal stamps and pins collections. Only after a burnout in 2000 I was ready for a



hobby again. The old letter scale that I bought at a flea market in the Dutch province named Brabant during my holidays proved to be the start of a new activity of collecting. I became a member of the Dutch, German and English-American Societies of collectors. The library of the Dutch Society GMVV with the friendly Mr. Siebert provided me with a lot of information about old letter scales. Also Ritzo Holtman, editor of the Journal of the Dutch Society, helped me further with an enormous amount of documentation. After a heart attack in 2001 and a following and still ongoing chronically depressed mood, my activity of collecting old letter scales became a very serious occupation. It became a sort of therapeutical activity. On weekends I get up early to visit flea markets searching for letter scales. I normally walk there for about one hour and this motion activity is considered to be good for me. Early in 2004 I proved to be a diabetic as well. Apart from more and different medication, the advice was to lose weight substantially and –again– more physical activities. To me the flea markets form attractive routes for walking.

Still, my collection of letter scales grows mainly by buying at Internet auctions. The supply is rich. One finds scales from Europe, mostly originating from Germany and from England. Also older American postal scales can be purchased fairly well at the Internet auction sites. I combine my hobby of collecting letter scales with several other leisure activities: photography, computer activities and making web pages dealing with my letter scales. After a couple of years of collecting I have sufficient letter scales, knowledge and background information to write some articles for the Journals of the Societies, in Dutch and make translations into English.

About the author:

André Sol was born in Amsterdam, the Netherlands in 1949, and retired in February 2005 after 30 years of mechanical engineering at Delft University of Technology. He has a web site presenting his collection of letter scales, in two languages: Dutch and English. The English address is: <http://home.wanadoo.nl/a.a.m.sol/index-e.htm>

Note:

This short article was first published in the Journal of the Dutch Society of collectors of Weights & Measures. In Dutch: Meten & Wezen, No. 130, June 2005, page 3102. It was translated and slightly edited by the author.

Letter Scales Marked OEST.P. 1766 BY ANDRÉ SOL

Introduction

Sellers at eBay auction pages sometimes date to 1766 those letter scales with the text OEST.P. 1766 on the back. Of course this is not correct: in that year special scales to weigh letters did not even exist. But what is the true meaning of OEST.P. 1766? OEST. is an old abbreviation of OESTERREICHISCHES, meaning Austrian. P. is the abbreviation of Patent, thus patent, and 1766 is the number of the patent. In this article the OEST.P. 1766 letter scale will be compared with the Austrian patent and with a couple of other patents of which the numbers sometimes are also present on the back of similar letter scales.

Patents

Readers with a computer connected to the internet, are able to view a lot of patents themselves at the Esp@cenet portal, at the web address <http://www.espacenet.com/index.en.htm>. (provided the Adobe Acrobat Reader is installed on their computer). Older patents are difficult or not (yet) available on your computer screen this way. Only recently I was able to view the above-mentioned patent with the number 1766 at the German Patent and Trade Mark Office as a Portable Document Format file (a PDF file). Select the beginner's mode to search at the website of GPTO at <http://depatisnet.dpma.de/>. Today the two capitals AT precede Austrian patents. Insert AT in the proper search window named <Publication number> and put the number 1766 in the next window. Now press the <Start search> button. The proper patent will be found as AT000000001766B. It is available for viewing and printing as a PDF file. Click the <PDF logo> button to activate your Acrobat Reader. First select the Resolution of 300 dpi mode at the top of your screen to ensure the best quality of the document. Second, select the <Load full document> option. After filling in a verification string dialog, the full PDF document is now loaded. It's possible to download and save a copy of the document on your own local computer as well. It is better to change the standard filename depatisnet.pdf, to in this case, AT1766B.pdf.

On the back of the letter scale presented in Fig. 1a and Fig. 1b, four patents are mentioned. Namely the following is pressed into the tin: OEST.P. 1766; UNG.P. 16742; D.R.P. 112860, 121631. See photo of detail Fig. 2.

The gathered patent information tells us a patent application for this letter scale was made in 1899 by the firm Balduin Heller's Söhne from Teplitz, now in the Czech Republic. At that time the country of Czechoslovakia did not exist. That state was formed after the First World War on October 14 of 1918 by the amalgamation of Bohemia, Moravia, Slovakia and Roethenia. Before 1918 Bohemia was a kingdom with Prague as the capital. Teplitz, or Teplice, is situated in Bohemia (also described as Böhmen). The Habsburgs ruled the Donau Monarchy,



Fig. 1a.  An OEST.P. 1766 bilateral letter scale, range at lower scale 0-20 grams and 20-250 grams at upper scale.

Fig. 1b.  Letter scale with four patent indications engraved on the back, including OEST.P. 1766.





Fig. 2. Detail of the back of the pillar showing the four patent numbers.

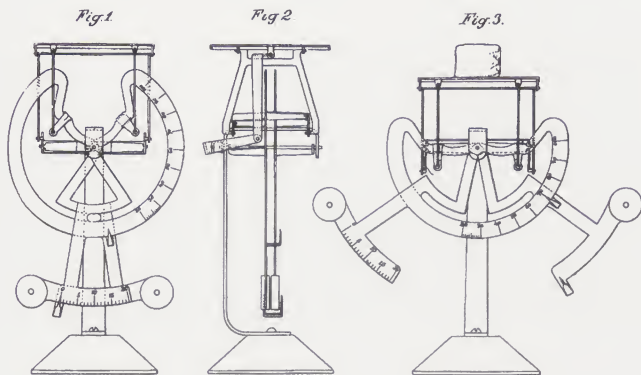
and Austrian-Hungarian dual monarchy from Vienna and Budapest. In 1867 the Donau Monarchy was established, the so-called Compromise–Ausgleich in German. The emperor of Austria, existing since 1804 also became king of Hungary. This went on until 1918. The history of this part of the world is rather complicated due to the great many changes.

What is striking in comparing the photographed letter scale with the illustrations of the different patents?

OEST.P. 1766

The Austrian patent was granted to the firm Balduin Heller's Söhne from Teplitz, now located in the Czech Republic. The application dates from June 24, 1899. The patent was granted on April 1, 1900 by the Kaiserliches Königliches Patentamt (translated: the Imperial Royal Patent Office). The design has the title *Bilateralwage*. (Translated: Bilateral scales). The design shown in this Austrian patent, see Fig. 3, differs in many details from the specimen shown here in the photos.

Fig. 3. The figures of the Austrian patent with the number 1766 dating from 1900.



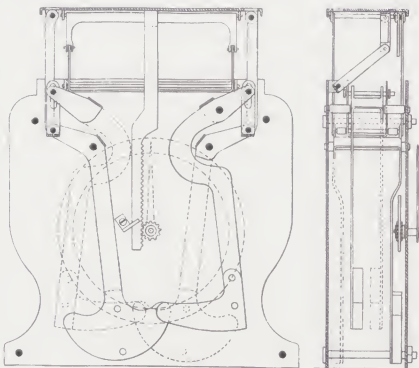
Look at the heightened base, look at the position of the circular poises and look at the geometry of the symmetrical mechanism.

UNG.P. 16742

The Hungarian patent (UNG.P. = UNGarisches Patent with number 16742) is nowadays indicated as HU16742. After several E-mails to the Hungarian Patent Office I was able to buy a reprint and received it by the old surface mail. The Hungarian patent application dates from July 6, 1899. The patent was granted on January 4, 1900 to Balduin Heller's Söhne from Teplitz. The patent is titled: *Bilateralis mérleg*.

The first three figures of the Hungarian patent are the same as the figures in the Austrian patent. For this reason they are not shown separately again here. The figures four, five and six from the Hungarian patent,

Fig. 4a. Figures four and five of the Hungarian patent with the number 16742 from the year 1900.



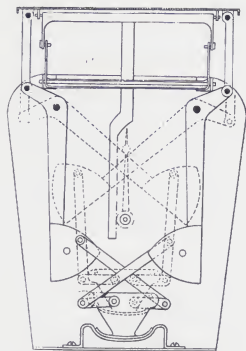


Fig. 4b. Figure six of the Hungarian patent with the number 16742 from 1900.

see Fig. 4a and Fig. 4b, show feasible different design and construction forms. They differ even more strongly from the photographed letter scale.

D.R.P. 112860.121631

The number behind the characters D.R.P. is rather misleading. D.R.P. is the abbreviation of Deutsches Reich Patent, meaning German Empire Patent. It became evident that two patent numbers are combined here. These numbers are 112860 and 121631.

The Kaiserliches Patentamt, The Imperial Patent Office, granted the former and oldest

patent with number 112860 to Georg Hahn in Duisburg on January 20, 1899. The patent was published on the August 22, 1900. Today you find this patent as DE112860, at the above-mentioned website of the German Patent and Trade Mark Office. DE is the internationally agreed combination of characters to precede German patents.

The drawings from the patent, see Fig. 5; show a scissors-like pendulum scale, which is able to adjust itself automatically to zero again when placed on a slanting surface. The graduations are placed above the main pivot and the load plate is hanging below the main pivot. The short upper graduations act as the indicator. I don't know whether or not this design was actually ever produced. The design differs very strongly compared with the letter scale of Fig. 1a. It is not clear to me why it was necessary to put the number of this patent at the back of this letter scale also.

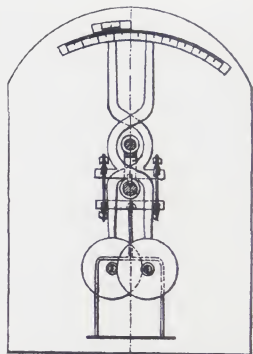


Fig. 5. Drawing of the German patent DRP 112860 from the year 1899.

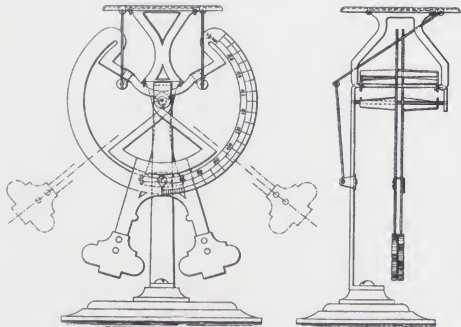


Fig. 6. The figures of the German patent DRP 121631 from the year 1899.

The second German patent, at that time referred to as D.R.P.121631 and today as DE121631, was granted on March 29, 1899, also to Balduin Heller's Söhne from Teplitz. The drawings of the patent, see Fig. 6, show a double pendulum scale which differs at many points from the real example as presented in Fig.1a and b. Again consider the base design, look at the differently-shaped poises and consider the geometry of the symmetrical mechanism.

Patents help to determine the date

The patent number on a letter scale tells us the letter scale was produced after the date of granting the patent.

The letter scale is not older than the patent date. But the letter scale model could have been produced during several decades. Data about the period of production are nearly always missing.

Table 1 presents the patents and their dates. A letter scale with these four patents is not older than April 1, 1900. Alas, it is not known how long this letter scale was produced, presumably not after World War II.

PATENT	APPLICATION DATE	GRANTING DATE	PUBLICATION DATE
DE112860	?	January 20, 1899	August 22, 1900
DE121631	?	March 29, 1899	June 24, 1901
HU16742	July 6, 1899	January 4, 1900	?
AT1766	July 24, 1899	April 1, 1900	July 25, 1900

Table 1. The dates of the patents



Fig. 7. Bottom of the letter scale.



Fig. 8. Concave shape on top of the base.

OEST. P. 1766 letter scales

The letter scale has two scales of measure. The lower scale goes from zero up to 20 grams, with one graduation unit per gram. The upper scale goes from 20 up to 250 grams, here there is one graduation unit per five grams. My specimen of this letter scale has lost both indicators almost completely. This could be restored. The base is made double-walled. This makes the base sufficiently stiff and rigid. I don't understand why the dished section is made in the underside of the base. (see Fig. 7) The concave shape on the top of the base, see Fig. 8, is beautiful but expensive. This letter scale is also called a scissors scale or bilateral scale, Fig. 9 clearly shows the scissors. The rectangular letter plate shown in Fig. 10 has graceful cutouts.

Fig. 9. Scissor like movement of the bilateral letter scale.



Many designs of this letter scale exist, with various details. This letter scale is best known as the OEST.P. 1766. As a matter of fact the indication of the patent number is not marked on every specimen of this design. There are scales that have the four patent numbers at the back, see Fig. 2. On a different specimen in my collection "AUSTRIA" is added to the text OEST.P. 1766. Also models with the added text "made in Austria" are known. The three different letter scale models in my collection have a geometrically identical weighing plate. The OEST.P.1766 scale is strongly related to the letter scale shown in Fig. 11. This bilateral letter scale dates from the period 1896-1918. In the heightened base of this letter scale is engraved BILATERAL BRIEFWAAGE and K.K. OEST. UNG.P. and D.R.P. A. The first abbreviation, K.K. OEST.UNG.P. stands for: Kaiserlich Königlich Österreichisches Ungarisches Patent, and the German meaning is translated: Imperial Royal Austrian Hungarian Patent. The second abbreviation, D.R.P. A. stands for: Deutsches Reich Patent Angemeldet and its German meaning is translated: German Empire Patent Applied for.



Fig. 10. ♡ ♡ Graceful cutouts in the rectangular letter plate.

Fig. 11. ♡ ♡ Engravings: Bilateral Briefwaage and the abbreviations K.K. OEST.UNG.P. and D.R.P. A.

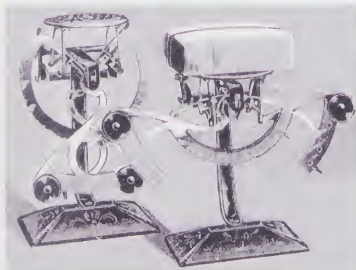


Fig. 13. ♡ ♡ Detail of the illustration in the journal "La Nature" from the year 1901.



The letter scale standing in the middle in Fig. 12 strongly resembles the letter scale placed at the left side. The engraving in the base reads PÈSE-LETTRES BILATERAL and Modèle Déposé. This is French meaning: BILATERAL LETTER SCALE and Registered Design. Very surprisingly this letter scale also has the four patents OEST.P. 1766, UNG.P. 16742, D.R.P. 112860.121631 indicated at the back of the pillar.



Fig. 14. Three letter scales, all with the text OEST.P. 1766 at the back.

This letter scale is also shown in the French journal *La Nature, Revue des sciences et de leurs applications aux arts et à l'industrie* of 1901, issue 29, pages 79-80. Fig. 13 is a fragment of the illustration on page 80 of *La Nature*. (By the way, it's possible to examine this Journal on line at <http://cnum.cnam.fr/ISER/4KY28.html>. The years 1873 up to 1905, inclusive, are available).

The three letter scales photographed in Fig. 14, all have the same four patent numbers engraved at their back, and still there are many differences in appearance. But their characteristic properties are identical and these are laid down and described in the patents: self adjusting letter scales which, thanks to the symmetry of the moving parts, don't need a separate zero leveling mechanism for adjusting the letter scale when placed on a slanting surface.

Notes: This is a translation of my article originally published in the *Journal of the Dutch Society of collectors of Weights & Measures*. In Dutch: *Meten & Wegen*, No. 134, June 2006, pp. 3193-3197

Old Advert

D L Robert's dairy scale, advertised on this old trade card, was patented Nov. 18, 1884 and had a capacity of 240 pounds. Roberts from Royalton, NY, was granted patent No. 308,198. This union scale was touted as the "only family scale with a butter salting beam." The ad measures $5\frac{1}{8}$ " by $2\frac{3}{8}$ ".

EVERY FARMER SHOULD HAVE

— ONE OF —

D. L. ROBERT'S

Dairy Scale.



FOR CITY SCALE TO
240 POUNDS
BUTTER SALTING BEAM

A CHILD TEN YEARS OLD CAN SALT
THE BUTTER WITHOUT MISTAKE

The Butter Salting Attachment is as simple as 1 to 16. No figuring required. Can weigh a tub of butter, a dressed hog, a quarter of beef, a bag of grain or a barrel of flour.

SEND \$6.00 FOR SAMPLE. PRICE, \$10.00. CIRCULARS FREE.

R. J. SWART, General Agent. DEPOSIT, N. Y.

The “Dove” Letter Balance Unmasked

BY STEVE BEARE

Last year, I spotted in an antique mall what initially appeared to be a small toy scale with a charming lion's paw tripod design, complete with its original colorful box (Fig.1)¹. Closer inspection revealed that this is a working pendulum postal letter scale, intended to be dismantled and packed in the box (Fig. 2).

Unfortunately, there are no identification marks on the scale other than PAT. APD. FOR. This phrase is repeated on the illustration of the scale on the box lid (Fig. 3), which further identifies this as the “Dove” Letter Balance. Marking the scale and the box PAT. APD. FOR suggests a scale aimed at the American market. However, these three words give no assurance that a patent was either applied for or granted, and a word search of the ISASC U. S. scale patent database gave no match with a Dove balance.

A better clue to the country of origin and approximate date is from the name of the engraver of the illustration on the box, “AM. Photo-Eng. Co, N. Y.”

Fig. 2. ¹ ² Disassembled “Dove” Letter Balance in box; the box measures 3 1/8" x 4 1/8" x 1 1/4" high.



Fig. 1. ¹ ² “Dove” Letter Balance and box; the overall height of scale is 5 1/4”.

(Fig. 3A) I located the working dates of this New York City company in the 1880-1900 period,³ consistent with both the box label and the scale design. Another piece of potentially useful information is the somewhat awkwardly worded instructions for use on the box label: “*Small Thumb Screw on the Right is to regulate to any unevenness of surface on which balance is placed.*”(Fig. 3B)

This suggests that English was probably not the native language of the inventor/maker, but also raises the possibility that this postal scale might have been imported from Europe for the American market.

I next checked all the U. S. postal scale patents, with a focus on New York area patents in the 1880-1900 period, and found an exact match of the “Dove” scale with U.S. patent number 373,568 (Fig. 4). This was issued on November 22, 1887 to Charles Richtmann of Newark, NJ, to whom two other scale patents had been issued in 1884 and 1885.

Who was Charles Richtmann?

A search of the online census and immigration databases⁴ and Newark city directories⁵ revealed that Charles Richtmann was born in Wiesbaden in 1848, immigrated to New York in 1870, and was later naturalized. In 1872 he married Emily, who was



Fig. 3. Detail of box- PAT. APD. FOR.

born in Saxony in 1848, and emigrated to NY in 1871. Charles was first listed in the Newark city directories as a machinist from 1872-1875. He then sold sewing machines from 1877-1879, which was a relatively common occupation for a machinist. He was again listed as a machinist in the Newark 1880 census, although he did not appear in the Newark city directories between 1880 and 1882.



Fig. 3A. Detail of box- AM. Photo-Eng. Co. NY.

Newark City Directory - Charles Richtmann

YEAR	OCCUPATION	ADDRESS
1872-1873	Machinist	h. 279 Springfield
1874	Saloon	273 Bank
1875	Machinist	h. 23 Campbell
1877	Sewing Machines	472 Court
1878	Sewing Machines	h. 304 S. Sixth
1879	Sewing Machines	h. 465 Court
1880-1882	Not Listed	
1883-1886	(H. Richtmann & Co.)	h. 16 or 19 Green
1888-1892	(H. Richtmann & Co.)	h. 206 Hunterton
1893-1895	(H. Richtmann & Co.)	r. 21 Green h. 206 Hunterton
1896-1901	Scale Manufacturer	21 Green h. 206 Hunterton
1902	Not Listed	
1903-1904	Retired	h. 72 S. Ninth

The first year that Charles Richtmann was listed as a scale manufacturer in the Newark city directory was in 1883. This was in connection with his partnership in the newly formed H. Richtmann & Co., and 1883 was the same year that his brother Henry appeared for the first time.

Passenger Lists show that Heinrich Richtmann, age 39, locksmith, arrived in New York on May 11, 1882 from Hamburg & Le Havre on the ship Westphalia, with his wife Marie, age 29, daughters Louise, age 8, and Emilie, 11 months, all born in Hesse.⁵

Henry and Charles, his older brother, around five years senior, formed a partnership in 1883, H. Richtmann & Co., Scale Manufacturers. This lasted until

Newark City Directory - H. Richtmann & Co. (Henry & Charles Richtmann)

YEAR	OCCUPATION	ADDRESS
1883-1891	Scale Manufacturer	19 & 23 Green
1892-1893	Scale Manufacturer	21 & 23 Green
1894-1896	Scale Manufacturer	21 Green

1896, when Henry either died or left the country. Charles took over the scale manufacturing from 1896 until 1901. Charles either died, or left Newark, NJ, in 1904.⁶

H. Richtmann & Co. placed ads in the Newark, NJ city directory for only their

Be careful and adjust as shown in the above. Small Thumb Screw on the right is to regulate to any unevenness of surface on which balance is placed.

Fig. 3B. Detail of box-Instructions for use.

Newark City Directory - Henry Richtmann

YEAR	OCCUPATION	ADDRESS
1883	(H. Richtmann & Co.)	h. 138 Howard
1884	(H. Richtmann & Co.)	h. 19 Green
1885	(H. Richtmann & Co.)	h. 27 Green
1886	(H. Richtmann & Co.)	h. 25 Morton
1888-1892	(H. Richtmann & Co.)	h. 252 Thirteenth Ave.
1893-1896	(H. Richtmann & Co.)	h. 21 Green

C. RICHTMANN. WEIGHING SCALE.

No. 373,568.

Patented Nov. 22, 1887.

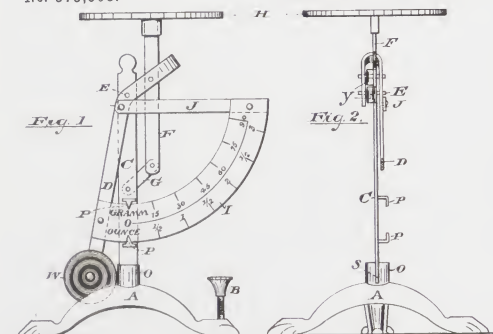


Fig. 4. Richtmann "Dove" Letter Balance patent, November 22, 1887, patent number 373,568.

first two years in the scale business, 1883 and 1884 (Figs. 5 and 5A). The ads imply that they manufactured a wide variety of scales, although no signed examples have yet surfaced of their "Druggists", "Chemists", "Jewelers", and Diamond Scales."

Charles Richtmann may have worked at some point prior to 1883 for the scale firm of Frederick Meyer, who was active in Newark from 1867 until his business was taken over by his son Frederick, Jr. in 1881. Like Charles Richtmann, Frederick Meyer was also from Germany, and was active as a scale maker in Philadelphia from 1840. In 1844 he formed the F. Meyer & Co. partnership with Henry Troemner, which was dissolved on May 20, 1854.⁷ Meyer disappeared until he took up his scale business again in Newark, which by 1870 had 13 hands,⁸ and by 1874 had 16 hands.⁹

In addition to the 1887 "Dove" Letter Balance, Richtmann patented two other scales.

Charles Richtmann obtained a patent for a combination coin and letter scale, assigned to H. Richtmann & Co., March 25, 1884, patent number 295,809 (Fig. 6). This is one of eight examples of American patented combination postal and counterfeit coin detectors.¹⁰ George Mallis knew of no known example in 1996, and thought that this was probably a case of a patented but non-produced design.¹¹ However, an unmarked example of this elegant, diminutive scale has been located in an ISASC member's collection, confirming that this patent was indeed manufactured (Fig. 7).¹²



H. Richtmann & Co.,
Manufacturers of
Balances and Weights
OF PRECISION,
Druggists', Chemists', Jewelers'
and Diamond Scales,
19 to 23 GREEN ST.,
NEWARK, N. J.

Fig. 5. 1883 Newark city directory ad for H. Richtmann & Co.

H. RICHTMANN & CO., MANUFACTURERS OF BALANCES AND WEIGHTS OF PRECISION.

Druggists', Chemists', Jewelers' and Diamond Scales.

19 to 23 GREEN STREET,

NEWARK, N. J.

C. RICHTMANN.
COIN AND LETTER SCALE.

No. 295,809.

Patented Mar. 25, 1884.

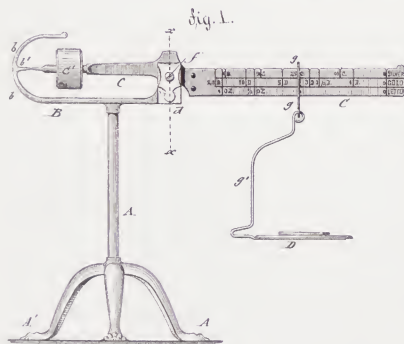


Fig. 7. 1884 Richtmann coin & letter scale; 7 1/2" long x 5 1/16" high.



Fig. 5A. 1884 Newark city directory ad for H. Richtmann & Co.

Fig. 6. Richtmann coin & letter scale patent, March 25, 1884, patent number 295,809.

The unique paw-footed three-legged stand of the 1887 "Dove" Letter Balance obviously had its genesis in the 1884 coin/postal scale.

On February 17, 1885 Charles Richtmann patented a postal scale, patent number 312,583, which was assigned to Richard R. Watson, NYC. (Fig. 8).¹³ An example of this scale is marked on the poise R. R. WATSON, PATENT APPLIED FOR, NEW YORK (Figs. 9 and 9A).¹⁴

The "Dove" Letter Balance has lead to Charles Richtmann and all three of his patented scales, and illustrates the power of patents and historical resources to document elusive and relatively unknown scale

makers. It is hoped that additional examples of signed Richtmann scales surface, as well as information on the background and training the Richtmann brothers received in Germany prior to their emigration to America.

Notes

1. Thanks to Todd Pattison of Andover, MA for his extraordinary restoration of the box, which had been extensively cello-taped.
2. *Equilibrium*, page 2890, reference 1.
3. *Ancestry.com*.
4. Grateful acknowledgment is made to Hagley Library, Wilmington, DE, and the New Jersey State Library, Trenton, NJ for access to their Newark City Directory microfilm records.
5. Wiesbaden, Germany is located in the State of Hesse.

6. 1880 census, Newark, New Jersey, 19 Hayes St. Charles Richtmann, age 30, machinist, b. Wiesbaden, as were both parents, wife Amelia, age 32, b. Saxony, both parents b. Mercersburg. 1900 census, Newark, New Jersey, 206 Hunterdon St. Charles Richtman [sic], b. September, 1848, age 51, manufacturer of scales, naturalized, married 28 years to Amelia, age 52, both born in Germany, emigrated in 1870 and 1871, respectively, one child living of one born.

7. Beare, Steve. *Directory of 19th century American Scale Makers*. An online version will be available soon for ISASC members.

8. The 1870 *Products of Industry* census records only one scale and balance manufacturer for Essex County, NJ, undoubtedly Frederick Meyer. \$3,200 capital, 13 hands, \$5,700 wages, \$28,210 Materials, sold \$45,000 products. Ref: Joseph Atkinson. *History of Newark, NJ*, 1878, page 331.

9. Frederick Meyers, Scales. The hands employed in the factory number 16, and their weekly payroll is \$200. The value of annual production is \$30,000. Ref: William F. Ford. *The Industrial Interests of Newark, N.J.* New York, 1874, Van Arsdale & Co., pages 106-107.

10. Newman, Eric P. and Mallis, A. George. *U. S. Coin Scales and Counterfeit Coin Detectors*. 1999, 11-2D-2.

11. *Equilibrium*, pages 990 and 2061.

12. Thanks to Jan Berning for alerting me to this scale, and to Phil Wehman for sharing information and pictures of this scale in his collection.

13. Richard R. Watson is listed in the NY city directories starting in 1878 as a stationer at 51 Nassau St. The 1880 census for Manhattan lists Richard Watson, age 26, Clerk in Store, living at 445 117th St., married to Ella, age 23, son William age 2, and Richard, age 1 month, all born in NY. He moved to Philadelphia by 1895 and is listed in the Philadelphia directories as a salesman from 1896-1899. The 1900 Philadelphia census finds him at 2537 31st St., born in NY Aug. 1854, age 45, Salesman Specialties, married to Ella, age 39, Will, age 21, Mary, age 18, Geo. K., age 11, Emily, age 9, Harold J., age 6, and Gladis, age 5, all born in NY except for Gladis, born in PA. The 1910 census for Philadelphia, 2153 32nd St., lists Richard Watson, age 54, Own Income, married to Ella for 33 years, four children living at home. By the 1920 census for Philadelphia, Richard, age 63, is retired, with Ella, and three children living in the household at 2845 North 28th St.

14. Thanks to Bill Doniger for making me aware of and allowing me to photograph this scale in his collection.

C. RICHTMANN.
WEIGHING SCALE.

No. 312,583.

Patented Feb. 17, 1885.

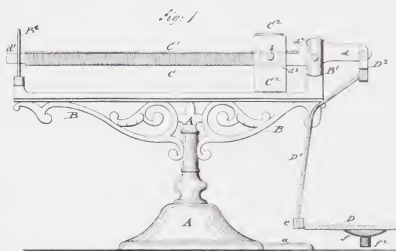


Fig. 8. // Richtmann postal scale patent, February 17, 1885, patent number 312,583.

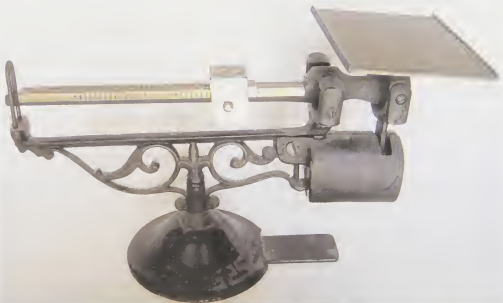


Fig. 9. // 1885 Richtmann postal scale, assigned to R. R. Watson; 9 1/4" long x 6 1/2" high.

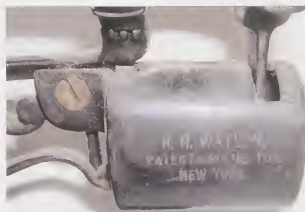


Fig. 9A. // 1885 Richtmann postal scale, poise detail.

Lead Cockleshells from Caesarea Maritima

BY LIONEL HOLLAND

Note: All the linear scales shown in this article are graduated in centimeters.

Lead objects in the form of cockle-shells are often seen in museum displays and sale catalogues¹. Though they never bear any kind of inscription or sign, they are usually described as "Roman weights", and (in a sale catalogue) assigned an imaginary denomination in the Roman weight-system: " $3\frac{1}{3}$ unciae", " $5\frac{1}{4}$ unciae" --- anything that will fit the measured mass within a few grams. This sidesteps the need to think about what they actually are --- besides making them easier to sell.

This article is about 82 such objects, all found at Caesarea Maritima².

Two marine biologists³ who examined about 50 specimens at my request, told me that the best-preserved ones appear to be accurate reproductions of cockle-shells (family Cardiidæ) --- so accurate, that they were able to identify at least three different species. Such shells are to be found by the million on the beaches of Israel.

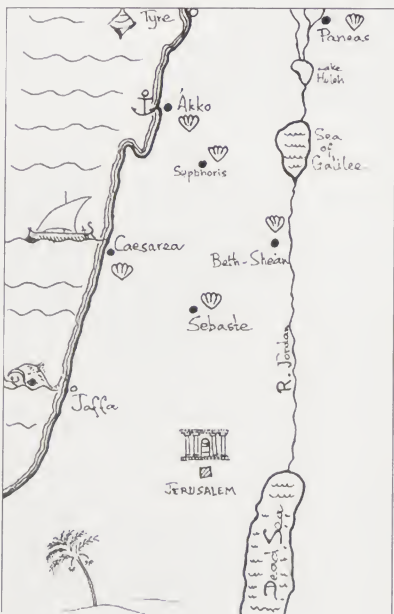


Figure. 1

Geography. Similar lead shell-shaped objects are to be found at ancient sites all over Israel. Find-sites known to me include: Sepphoris (Zippori); Sebaste (near Shechem-Neapolis); Caesarea Philippi (Paneas); 'Ein Hamifratz (near 'Akko-Acre); Nisa-Scythopolis (Beth-She'an) (Figure 1). Several of these locations are nowhere near the sea, so a specifically maritime or nautical association does not seem likely. Flinders Petrie, documenting over 6000 weights from his (and others') excavations in Egypt, mentions only one shell-shaped object of bronze⁴ --- none of lead. I know of, no cockle-shaped objects of lead found anywhere outside Israel. This may be because of inadequate reporting of provenance (sadly, this is almost the rule where ancient weights are concerned) --- or they may be a local phenomenon, peculiar to this country.



Figure. 2 Centimeter measure along the bottom edge.

Dating. A cockle-shaped lead piece (Figure 2) was found among the debris brought up by a dredger, working close inshore alongside the pier of the Hadera power station, about 2 km south of Caesarea. Other objects found in the same debris (the remains of a shipwreck) included hundreds of coins of Constantine I

Lead Shell-like Objects

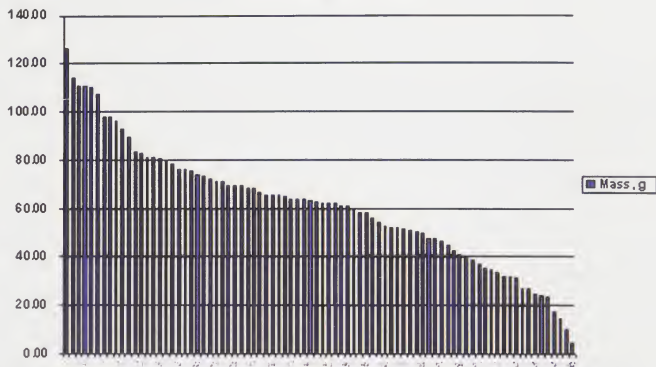


Figure 3 Mass distribution histogram

indicating a date early in the 4th century C.E. This lead piece did not necessarily originate in Caesarea: nothing is known of the ship's port of origin or ports of call.

I have no other clues as to the closer dating of these objects inside the life-span of Caesarea (2nd cent. BCE - 1265 CE).

Mass. Let us consider the question of whether these pieces are, or are not, weights. A mass distribution histogram (Figure 3) indicates a random distribution of mass. They certainly do not all belong to any organized weight-system, Roman or otherwise⁵. The possibility that some, or all, pieces may nevertheless have functioned in some way as weights, is discussed below in more detail.

Method of Production. These objects have been cast in moulds. A simple way of preparing a mould from an actual cockle-shell, would be to press the curved face of a shell into the soft, flat surface of some material such as moist clay, allow the material to harden, add a cover (in the present case, this would be a flat surface), then fill the mould with molten lead via a channel. Similar moulds were used in antiquity for casting simple shapes: lead slingshot bullets, tokens, etc. Multiple moulds were often used. The following details tend to confirm that this --- or something like it --- was indeed the method used to cast these cockle-shells:

- The "reverse" side of all specimens (except one) is flat and unmarked.
- On the specimen in Figure 4 can clearly be seen a flange, or rim, formed by lead leaking out between the two parts of the mould, where these did not fit closely. Several other pieces show similar vestiges of such a flange, or of a casting-channel.
- Some of the specimens are incomplete (Figure 5). This could be due to there having been insufficient molten lead in the ladle, or crucible, to fill all the cavities in a multiple mould. Slingshot bullets, which were cast in the way I



Figure 4

have described, are also occasionally found incomplete, in the manner of Figure 5.

- All known specimens have measurements of the same order of magnitude as those of the actual cockle-shells found in profusion on Israel's beaches. Most of them measure between two and three centimeters across the widest part. This is reflected in the mass distribution histogram (Figure 3).

Other methods of manufacture than that proposed (for example, the "lost-wax" process) are possible, but far less probable, since they are all very much more laborious.

Form. One unique piece (Figure 6) is concavo-convex, with ribs on both faces. I have no explanation to offer for this. All the other specimens have one face convex and ribbed, the other flat and featureless. They show a wide variety of detail. In some, the ribs are



Figure. 5



Figure. 6



Figure. 7

virtually complete, and flawless; in others, only vestiges of ribbing can be seen around the rim.

One (Figure 7) has no ribs at all; it represents a different species of cockle (*laevicardium norvegicum*) from any of the others. The specimens with missing parts have already been mentioned. Some pieces are quite strongly flattened on the convex face, making them less likely to roll when placed on a flat surface (see Figure 13, below).

Some pieces have gross deformations, which could only have been produced by distorting the shape of the mould (Figure 8).

One similar lead piece, not of this group, has a large appendage in the form of an arrow-tail or fish-tail (Figure 9). It was found by the writer at Paneas in Galilee. Its mass is 47.5 g.

There is no literary evidence of which I am aware, which might help us understand why these pieces were made, or by whom. Any discussion of this subject must necessarily be speculative. The few shreds



Figure. 8

of circumstantial evidence offered here are all I have, and do not amount to much. Over the years I have heard a number of hypotheses put forward, as to the origin and function of these objects:

Weights. Though it is clear that all the objects do not belong to any single weight-system⁶, it is conceivable that some of them might in fact be related to one or more systems. They could also have served as weights without necessarily being a part of any system. Or they may have been conscripted for use as weights, long after having been made and used for some quite different purpose. Their form makes them unhandy for use as weights: with flat side down, they are not easy to pick up. The partial flattening (already mentioned) on the curved side of some pieces, may have been meant to make them more stable at rest, and easier to handle.

These pieces could not have served as weights for fishing-lines, or nets; there is no way of attaching them to anything.

Decoration. Cockle-shells were a popular decorative motif in antiquity⁷. Cockles are depicted frequently on the Roman *aes grave*⁸, and on various architectural items (Figure 10). On lead cooking-stoves from ancient ships (a number of which have been found in Israel), the supporting lugs on which the cooking-pot would have stood, are often in the form of cockles.

Two specimens in this group (Figure 11) have adhesions of foreign matter on the flat surface. Chemical tests indicate that these adhesions are calcareous (not corrosion products) --- possibly remnants of building material. These pieces might have been used as some kind of decorative inlay, on a plaster or cement surface. I know of no archaeological finds in Israel or elsewhere, however, which would substantiate this.

Missiles. Extremely unlikely. Greek and Roman lead slingshot bullets are aerodynamic, and fairly uniform as to shape, size and mass (Figure 12). The cockle-shaped pieces would not have been effective as missiles⁹.

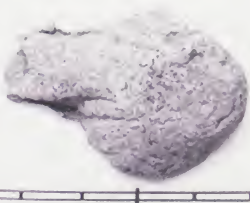


Figure 9

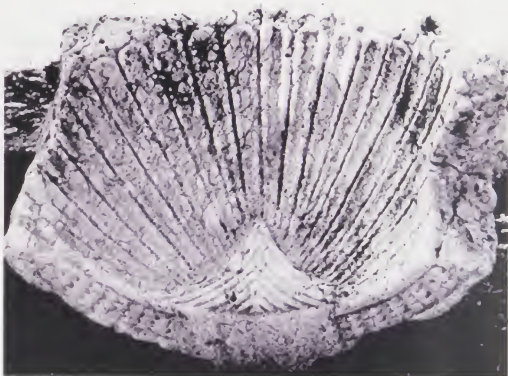


Figure 10

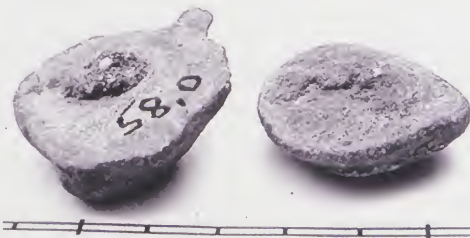


Figure 11

Pilgrim Tokens. The shell of the scallop (*pecten jacobaeus*), a wholly different mollusc from the cockle, is associated with Christian pilgrimage to the shrine of St. James of Compostela in Spain. These are not.

Game-pieces. Board-games were popular in antiquity. The largest of these objects would have been unwieldy as game-pieces; moreover, as mentioned earlier, they are not always easy to pick up. Still, the possibility exists that at least some of them may have been used in this way: several specimens have been made with the curved surface considerably flattened (Figure 13), perhaps to make them more stable, and at the same time more easy to pick up.

Ingots and Means of Exchange.

Lead was the most widely-used metal in classical antiquity. It was inexpensive compared to other metals, and its low melting point and relative softness made it easy to cast, and to work by hand. In almost any household in Greek and Roman times, lead would be used in a variety of ways: made into utensils, vessels, amulets, statuettes and votive objects --- even used to plug holes in earthenware pots (Figure 14)¹⁰, and to staple broken pieces of pottery together.

Large and small objects of lead were also widely used in trade and industry: water-pipes, anchors, weights of all kinds, etc. It is obvious that lead would have had to be available for sale in small quantities, to domestic and craft users. Shell-shaped ingots, easy to produce at no great trouble or expense, may simply have been a convenient way of attractively packaging small quantities of lead, for subsequent retail sale¹¹. Lead is such a universally valued material that lead objects of various forms (*tesserae*, tokens) have been used in many cultures, from classical antiquity up to modern times, as small change when coins of small denomination were in short supply. Some of these shell-shaped pieces may have served such a purpose. Pieces of various sizes would be convenient, but a strictly ordered system of mass-ratios would not really be necessary.

No doubt many other possible uses could be dreamed up for these shell-shaped lead castings. Clearly, whoever made them had some clear purpose in mind; so far, we have no idea what that purpose was. What is needed is not more guesswork, but actual evidence of one, or several, of the uses suggested here, or of any other use. Perhaps readers of EQM have additional information to offer. The author will be happy to hear from them.

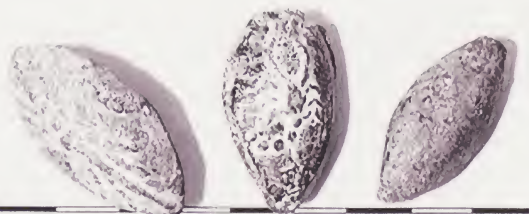


Figure 12 ▲▲

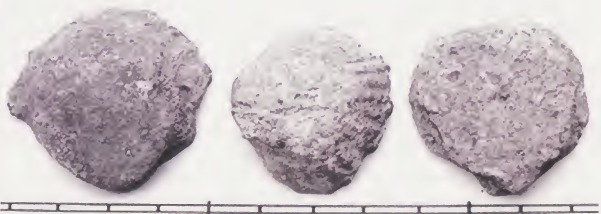


Figure 13 ▲▲

Figure 14 ✂



About the Author:

Lionel Holland is a semi-retired industrial chemist. He has lived in Israel for 53 years. His home is 15 minutes' drive from Caesarea Maritima. He enjoys the study of weights, and is writing a book about several hundred weights of Caesarea, of which the present article is part of a chapter. He welcomes correspondence from collectors and students.

Notes:

1. See, for instance: *Münz Zentrum Auktion XXXVII* (9 November 1979), no. 4090.
2. Caesarea Maritima was founded in the 2nd. century BCE as a Phoenician trading colony named Strato's Tower. It was given to Herod I, King of the Jews (named "The Great" by himself and his employees), by his patron Augustus Caesar. Herod built on the site a model city, with a splendid harbour, and named it Caesarea after his patron. After the extinction of Herod's dynasty, Caesarea became the capital of the Roman province of Judaea Palaestina. It was captured by Arab armies in 635 or 636, and fell to the Crusaders in 1101. In the year 1265 Caesarea was sacked by the army of the Mamluk Sultan Baybars, and its fortifications pulled down. It remained desolate until modern times.
3. The late Professor Al. Barash and Dr. Zipora Danin, both late of the Department of Zoology, The University of Tel Aviv.
4. Petrie, W.M.F., *Ancient Weights and Measures* (London, 1926), no. 5155a. Several similar bronze pieces are known from Caesarea.
5. For a similar histogram showing an organized weight-system, see Biggs, N., and Withers, P., *Lead Weights - the David Rogers Collection* (Llanfyllin, Powys, 2000), p. 61 - The Norwich Weights. Biggs and Withers' methodology is an unexcelled model for the systematic study of weights (I try to copy it, as well as I am able) - their book is a "must" for any student or collector.
6. See ref. 5, pp. 9-10: *The Mechanics of Weighing*.
7. Fig. 11: cockle-shell building decoration, from Kfar Nahum (Capernaum) in Galilee. The marble fragment is about 70 cm across.
8. Cast bronze coinage of the early Roman republic
9. Fig. 13 shows three typical slingshot bullets found at Caesarea. They range in mass from 50 to 70 g. One is plain, the others are adorned with a thunderbolt and a scorpion, respectively.
10. Fig. 14: piece of earthenware vessel, with lead plug (found at Caesarea).
11. For this suggestion I am indebted to my friend and onetime business associate, Adolfo Eidelstein.

The Adjusting Mechanism on Roberval Postal Scales

BY KEN GOVIER

My first scale purchase, a Roberval Postal Scale similar to that illustrated in Figure 1, was intended as a memento of an apprenticeship served long ago in the GPO Factories, Birmingham, England. These factories were initially established for the repair of telegraph and postal equipment but evolved to embrace the repair of telephones and modern electronic transmission equipment.

My early training had equipped me well for the urgently required stripping, cleaning, assembling and balancing operations that my new acquisition was crying out for. Initially this was very much a 'learn as you go' process for I had little, if any, knowledge of scales. Reassembling my, by now gleaming, scale I discovered a better state of balance could be achieved by adjusting the position of the lug on the A frame bottom bracket. I assumed this was a design feature to aid adjustment and the normal means of fine tuning the balance on this type of scale – an assumption soon to be squashed by a number of local 'experts'. I retreated quietly and tried to forget this little episode.

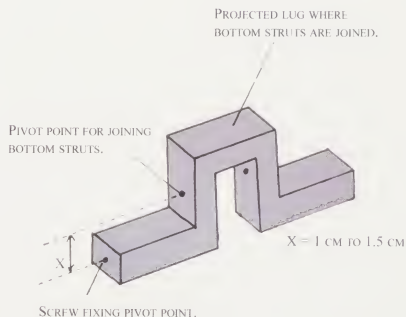
Then along comes Andrew Crawforth's stimulating article (EQM pages 2990 – 2993) on a Mordan scale to remind me of that earlier incident. A little more experienced by now I decided to take a closer look at Roberval Postal Scales focussing attention on the bottom bracket joining the two A frames (see Figure 3 and Sketch A). Of particular interest was the projecting lug providing the linkage point where the two bottom struts are joined – a common feature on the many different samples of this type of scale that I examined.



Figure 1. This scale was made by S Mordan for Howell & James & Co., Regent Street, London. The cast brass tray, with feet cast in, is decorated with champlévé enamel. E1 is stamped into base, but this code has not been explained in any documents so far found. The tray is 8½ ins across, including the handles and 5 ins wide.

Two features stood out.

First, with the exception of a few Mordan scales that are perhaps more 'decorative' than functional, all scales of the type illustrated in Figure 1 have the front bottom bracket fixing screw positioned so as to be easily accessed by a screwdriver. As illustrated in Figure 2, this often involved fitting the bracket above any obstruction caused by a weight socket positioned in front of the A frame. This arrangement would have involved making changes to the manufacturing process, these are invariably troublesome and often expensive - they would not have been implemented unless access to the fixing screw was required for some useful purpose. On the decorative Mordans mentioned a bracket formed into a weight socket is fixed to the A frame so as to completely conceal the fixing/adjustment screw, but from my observations this arrangement is the exception not the rule.



Sketch A. The bottom bracket fitted between the two 'A' frames on Roberval postal scales.

Second, consider the relatively complex design of the A frame bottom bracket as illustrated in Figure 3 and Sketch A. The key design feature of this bracket is undoubtedly the extended lug that provides a joining and pivot point for the two bottom struts. This pivot point is, on all the samples examined, almost always between 1 cm and 1.5 cm above the pivotal point formed by the bottom brackets fixing screws. The gap between these pivotal points ensures that when the bottom bracket is adjusted, i.e. rotated slightly right or left, the pivot point on the lug moves through an arc a few millimetres to the right and left of centre. The sideways movement this creates is transmitted through linkages to the weight and load pans thereby changing the scales point of balance. This adjustment therefore provides a readily available means of fine tuning a scale's balance.



Figure 2. Because the cup holding the weights prevents access to the bottom bracket, the A-frame and the legs under the plates have been lengthened. The long legs prevent the scale from tipping excessively when used.

Mordan did not always use longer legs when there was a cup for the weights.

The cup is not finished to the high standard of Mordan, so maybe it was cast by the maker of the tray, and not by Mordan's workshop.

The two design features I have highlighted – and, with the exception of the decorative Mordens mentioned,



Figure 3. Showing the bracket between the A-frames. The characteristic straight legs under the plates of Mordan scales show very clearly.

they are common to all the Roberval Postal Scales I have examined – provide the means (access to an adjusting screw) and mechanism (an off centre pivot point giving transverse movement through linkages to the load and weight pans) by which the balance of this type of scale could be adjusted. This surely illustrates beyond any reasonable doubt that manufacturers adopted the complex structure described specifically to facilitate the fine tuning of the scale's balance. However if there are any views to the contrary I would be very interested to learn of them.



A Balanced View

Michigan Regional Meeting

The ninth annual Michigan regional meeting was held on October 7th 2006 at Utz and Shirley Schmidt's home on the beautiful shores of Lake Huron. The meeting was well attended by nineteen enthusiastic scale collectors.



Back Row: Jim Dietrich, Mary Smith, Les Firth, Ben Smith, Cass Schorsch, Jack Mickevich, Bob Jibben, Bill Berning, Dian Laycock, Donna Doyscher, Ray Doyscher, Greg Moss.

Front Row: Bob Hayden, Elaine Firth, Shirley Schmidt, Jan Berning, Peter Laycock, Carol Hayden, Utz Schmidt

Members came from Minnesota, Illinois, Pennsylvania, Texas, Michigan and Ontario. The day was spent viewing Utz's extensive scale collection nicely displayed in his home and pole barn. As has become the custom everyone enjoyed a delicious pot luck lunch provided by the hosts and their guests. Plans are already in place for the tenth annual Michigan Regional Meeting that will be held at Scottville Michigan in October 2007 at the home of Cass Schorsch and Jack Mickvich where the group will enjoy viewing Jim's scale collection and Cass's new art studio. Should be lots of fun!

Dearborn Convention 2007

Don't forget!! Mark your calendars now for the 2007 Dearborn convention. The committee reports that plans are well under way for another outstanding convention. A full agenda has been planned that includes tours of the Henry Ford Museum, Greenfield Village and the Rouge Assembly plant. The Thursday night dinner will be held at the Fairlane Manor the Henry Ford home, a tour of the home will be conducted prior to dinner. As well, a not to be missed optional tour on the Monday after the convention to view the Jim Dietrich collection has been planned. All of the regular activities, album sharing, silent auction, show and tell, program presentations and the annual general meeting will take place. Mark your calendar for May 17, 2007. Further details will follow early in 2007.

Election of Officers

The terms of two officers, Bob Jibben, Vice President and Leslie Firth, Treasurer will terminate at the end of this year (December 31, 2006). Bob, in his role as Vice President, has been responsible for convention support, EQM liaison and publication. Les, as treasurer has been responsible for all the financial activities of the Society. Both have done an outstanding job and have indicated that they would like to stand for reelection for a two and one half year term beginning January 1, 2007 and ending May 31, 2009. Included in this mailing of your EQM and this news letter is a ballot with Bob's and Les's names on it. Also included is an addressed envelope. Please fill out the ballot and return it as soon as possible.

ODE TO THE SCALE

The following poem by member Barrett Silverstein of Raleigh, North Carolina is a reprint from the July 1986 newsletter.

ODE TO THE SCALE

*A fish has SCALES upon its back.
If my plant has SCALES, I'm taken aback.*

*I use a SCALE to measure points.
I draw to SCALE to compare two joints.*

*I work for SCALE to support my wife.
I sing a SCALE for the joy of life.*

*I use a SCALE to weigh my crop.
The SCALES of Justice never stop.*

*I SCALE a rock to see it skip.
I SCALE the mast aboard a ship.*

*So for the short and long term run of it,
I collect those SCALES just for the fun of it.*

Website Update

Carol Hayden, ISASC Website Editor reports the following website updates; The Invitational for the Dearborn Convention is now posted under Annual Convention. If you have not taken a look at Scale Tutorial (access from the link at the top of the Home page) you might want to do so. Also, the Wormser Collection is posted under Gallery for those of you who were not able to see it during the San Francisco Convention. We would like to thank Norm Cima, Bill James and Bill Doniger for their contributions in bringing the Wormser Collection to the website for all to see.

Welcome To New Members

I would to take this opportunity to welcome the following new members and to encourage them to contact any of the members of ISASC should they have any questions.

Murray Siegel,	Encino,	California
Marc Stolzer,	Edison,	New Jersey

*****Happy Thanksgiving*****

Question: What do you get when you divide a pumpkin's circumference by its diameter?

Answer: Pumpkin PI

If any of you have news or items of interest that you would like to share with other members of the society please let me know and I will be happy to pass them on. I can be reached by phone at 416 226 0651 or by email at peter.laycock@utoronto.ca Until next time keep up the hunt!! I hope you find a few new scales.



Peter Laycock,
President ISASC